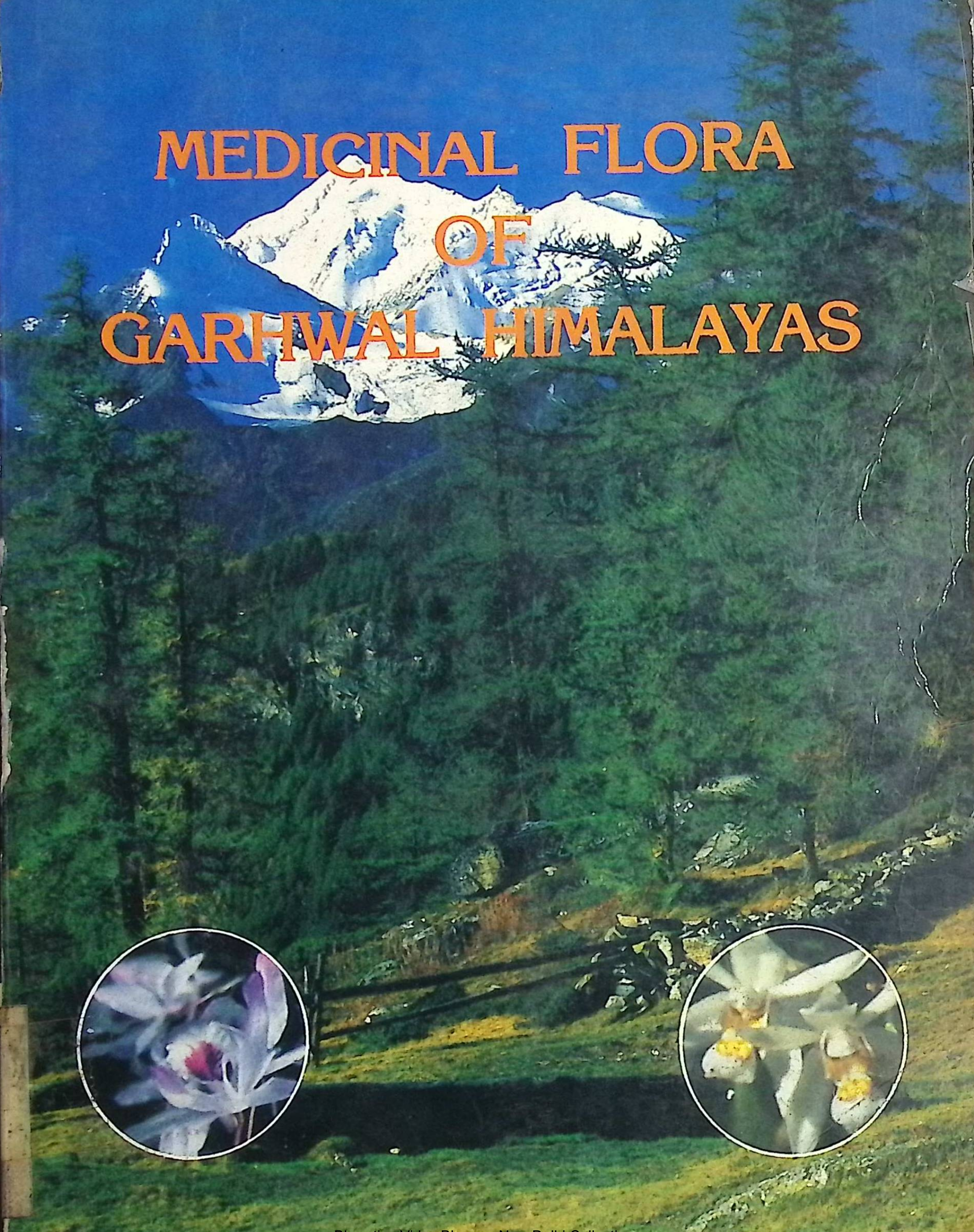
MEDICINAL FLORA OF GARHWAL HIMALAYAS



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MEDICINAL FLORA OF GARHWAL HIMALAYAS

BY

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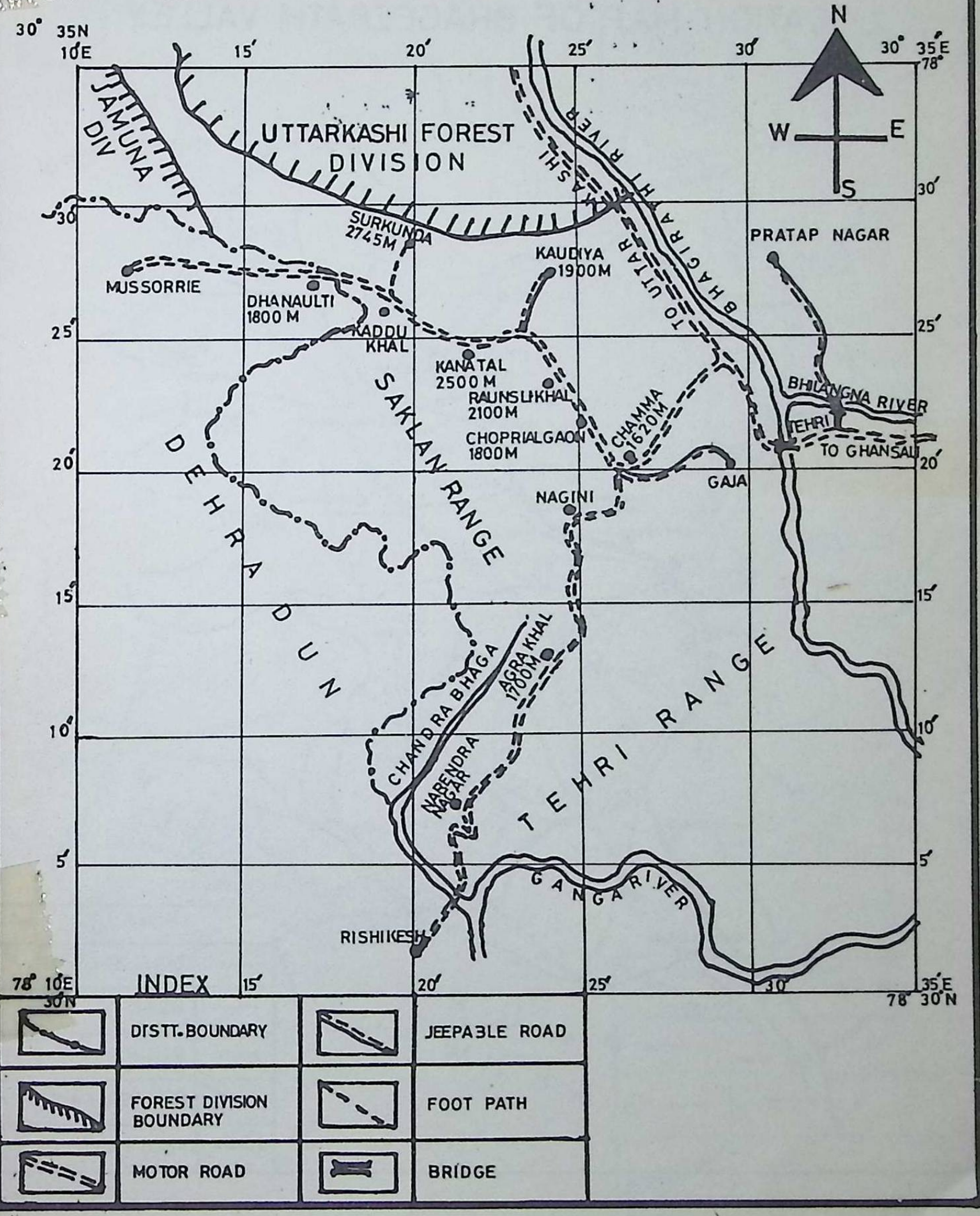
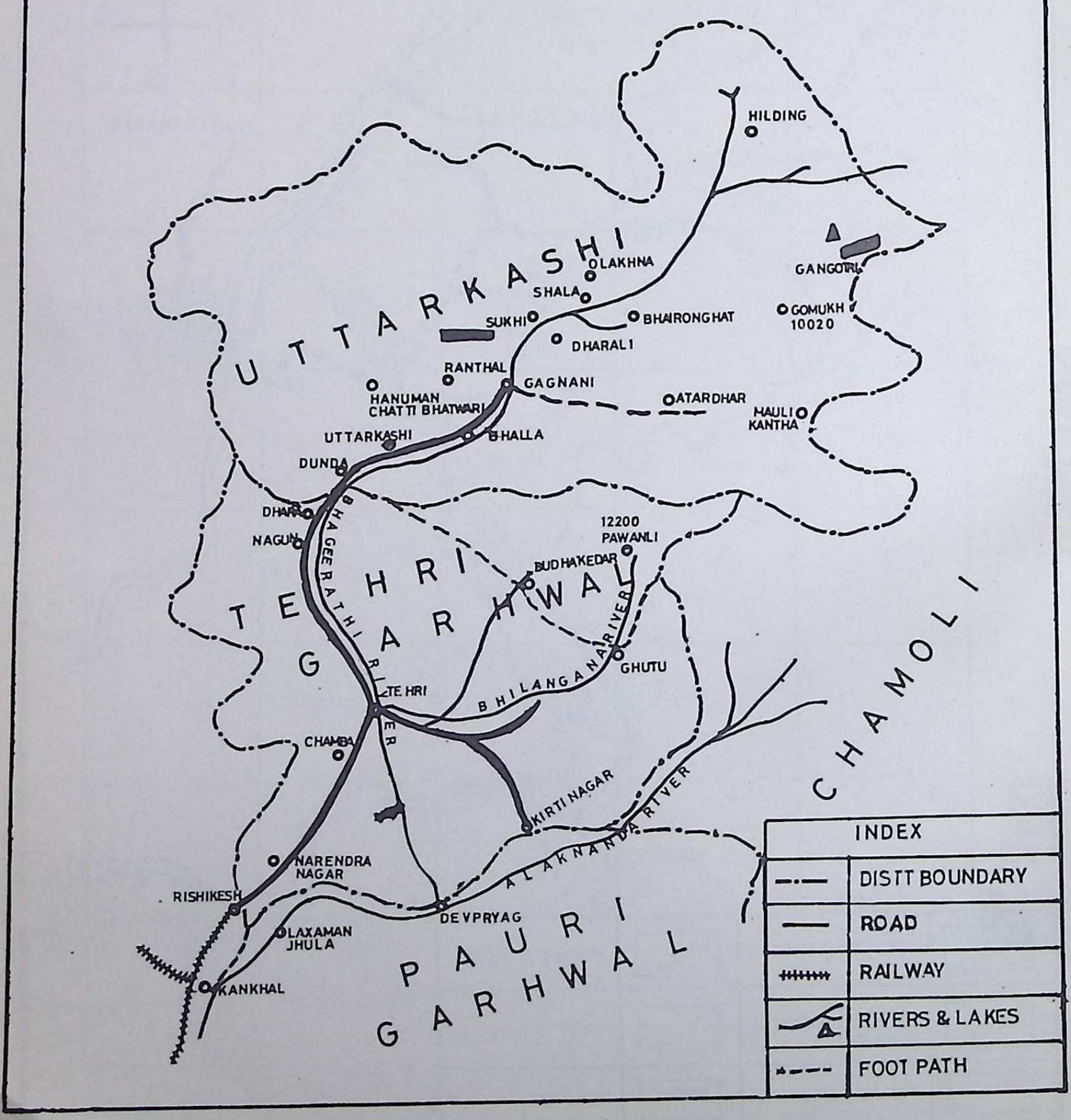
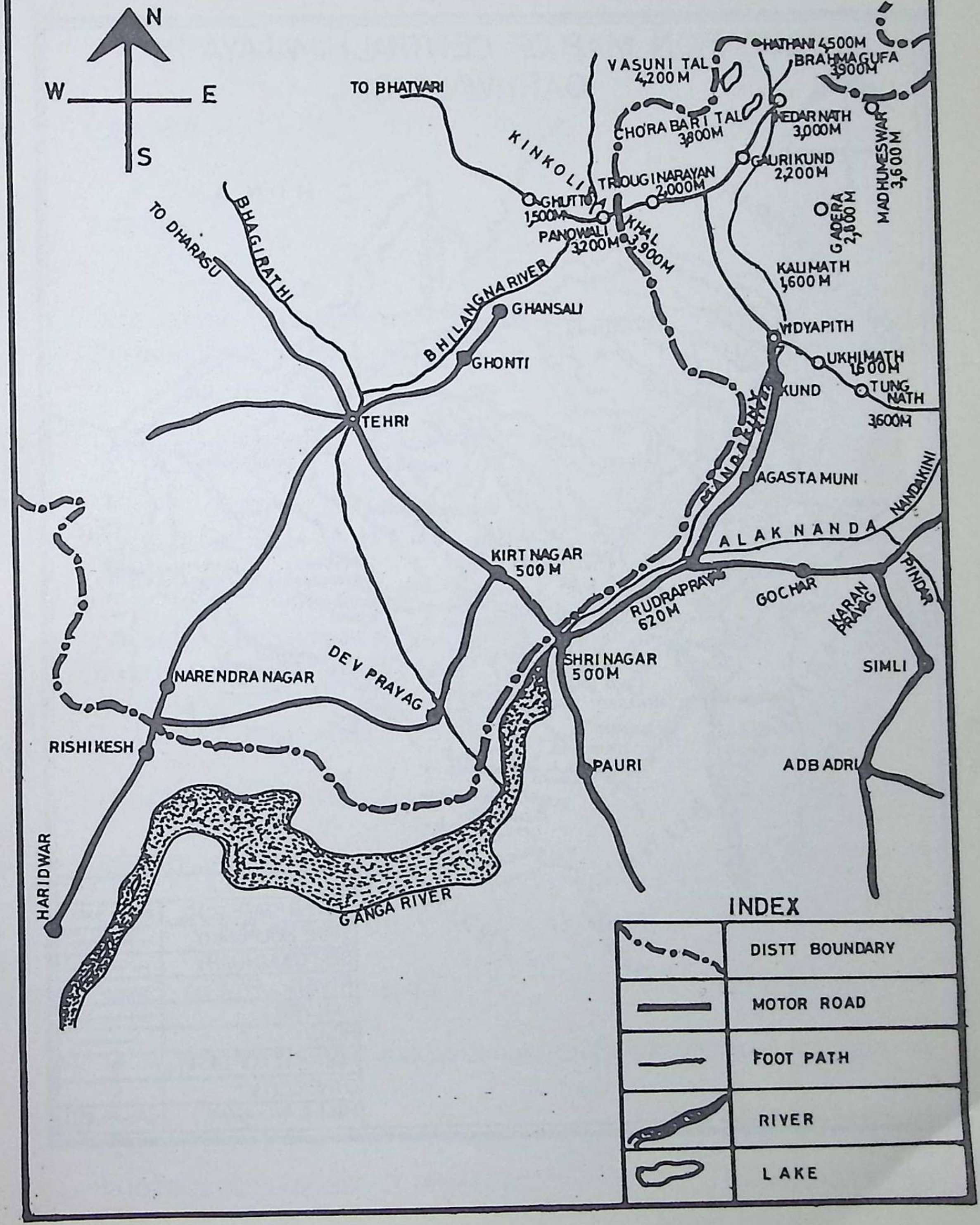
LOCATION MAP OF KANATAL IN SAKLANA RANGE OF TEHRI GARHWAL FOREST DIVISION

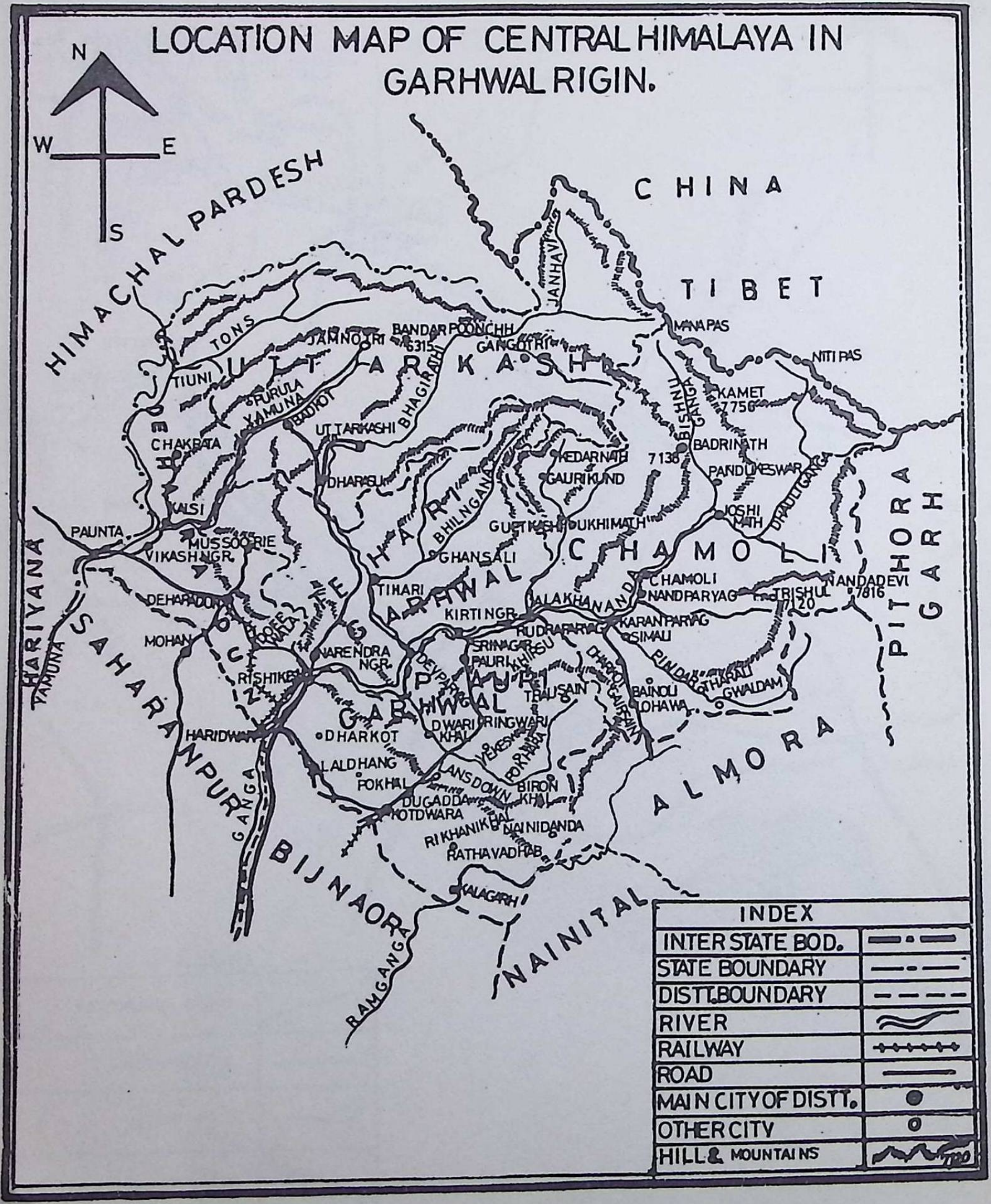

30° 35N
10E
15′
20′
25′
30′
30° 35E
78°
N
W
E
S
JAMUNA DIV
UTTARKASHI FOREST DIVISION
TO UTTARKASHI
BHAGIRATHI RIVER
SURKUNDA 2745M
KAUDIYA 1900M
PRATAP NAGAR
MUSSORRIE
DHANAULTI 1800 M
KADDU KHAL
KANATAL 2500 M
RAUNSLIKHAL 2100M
CHOPRIALGAON 1800M
CHAMMA 1620M
BHILANGNA RIVER
TEHRI
TO GHANSALI
GAJA
NAGINI
SAKLAN RANGE
DEHRADUN
AGRA KHAL 1700M
CHANDRA BHAGA
NARENDRA NAGAR
TEHRI RANGE
GANGA RIVER
RISHIKESH
78° 10E 30N
78° 30N
INDEX
DISTT. BOUNDARY
JEEPABLE ROAD
FOREST DIVISION BOUNDARY
FOOT PATH
MOTOR ROAD
BRIDGE

LOCATION MAP OF BHAGEERATHI VALLEY


UTTARKASHI
HILDING
OLAKHNA
SHALA
SUKHI
BHAIRONGHAT
GANGOTRI
GOMUKH 10020
DHARALI
RANTHAL
GAGNANI
HANUMAN CHATTI BHATWARI
ATARDHAR
HAULI KANTHA
UTTARKASHI
BHALLA
DUNDA
DHARA
NAGUN
BHAGEERATHI RIVER
12200 PAWANLI
BUDHAKEDAR
TEHRI GARHWAL
NAR RIVER
GHUTU
TEHRI
BHILANGANA
CHAMBA
KIRTI NAGAR
ALAKNANDA RIVER
CHAMOLI
NARENDRA NAGAR
RISHIKESH
DEVPRYAG
LAXAMAN JHULA
KANKHAL
PAURI GARHWAL
INDEX
DISTT BOUNDARY
ROAD
RAILWAY
RIVERS & LAKES
FOOT PATH

LOCATION MAP SHOWING THE MANDAKINY VALLEY CHAMOLI-GARHWAL U.P.


N
W
E
S
HATHANI 4500M
VASUNI TAL 4,200 M
BRAHMAGUFA 3900M
CHORA BARI TAL 3800M
KEDARNATH 3,000M
MADHUMESWAR 3,600 M
TO BHATVARI
KINKOLI
GAURIKUND 2,200M
TRIOUGINARAYAN 2,000M
GHUTTU 1,500M
PANOWALI 3200M
KHAL 3,900M
GADERA 2,800 M
KALIMATH 1,600 M
TO DHARASU
BHAGIRATHI
BHILANGNA RIVER
GHANSALI
GHONTI
VIDYAPITH
UKHIMATH 1600M
KUND
TUNG NATH 3600M
TEHRI
MANDAKINY RIVER
AGASTAMUNI
NANDAKINI
ALAKNANDA
KIRT NAGAR 500 M
RUDRAPRAYAG 620M
GOCHAR
KARAN PRAYAG
PINDAR
SHRINAGAR 500M
DEV PRAYAG
NARENDRA NAGAR
SIMLI
RISHIKESH
PAURI
AD BADRI
HARIDWAR
GANGA RIVER
INDEX
DISTT BOUNDARY
MOTOR ROAD
FOOT PATH
RIVER
LAKE



LOCATION MAP OF CENTRAL HIMALAYA IN GARHWAL RIGIN.

N
W
E
S
HIMACHAL PARDESH
CHINA
TIBET
HARIYANA
SAHARANPUR
BIJNAORA
NAINITAL
ALMORA
PITHORA GARH
UTTARKASHI
TEHARI GARHWAL
CHAMOLI
PAURI GARHWAL
DEHRADUN
TONS
JAMNOTRI
BANDAR POONCHH
6315
GANGOTRI
JANHAVI
MANA PAS
NITI PAS
KAMET
7756
BISHNU GANGA
BADRINATH
PANDUKESWAR
DHAULIGANGA
JOSHI MATH
7138
KEDARNATH
GAURIKUND
GUPTKASHI
UKHIMATH
TIUNI
PURULA
YAMUNA
BADKOT
UTTARKASHI
BHAGIRATHI
CHAKRATA
DHARASU
BHILNGANA
KALSI
PAUNTA
MUSSOORIE
VIKASHNGR.
GHANSALI
TIHARI
DEHRADOON
KIRTINGR.
ALAKHANANDA
CHAMOLI
NANDPARYAG
TRISHUL
7120
NANDADEVI
7816
KARANPARAG
SIMALI
RUDRAPARYAG
SRINAGAR
PAURI
KHIRSU
DEVPARYAG
NARENDRA NGR.
MOHAN
YAMUNA
RISHIKESH
SONG
PINDAR
THARALI
GWALDAM
BAINOLI
LOHAWA
THALISAIN
GAIRSAIN
HARIDWAR
DHARKOT
DWARI KHAL
RINGWARI
NAYAR
POKHRA
LALDHANG
POKHAL
LANSDOWN
BIRON KHAL
DUGADDA
KOTDWARA
RIKHANIKHAL
NAINIDANDA
RATHAVADHAB
GANGA
KALAGARH
RAMGANGA
INDEX
INTER STATE BOD.
STATE BOUNDARY
DISTT. BOUNDARY
RIVER
RAILWAY
ROAD
MAIN CITY OF DISTT.
OTHER CITY
HILL & MOUNTAINS

CONTENTS

1. FORWARD PAGE NO. i

2. PREFACE PAGE NO. iii

3. GEOGRAPHIC INTRODUCTION OF UTTARAKHAND HIMALAYA PAGE NO. v

4. NATURAL GRANDEUR PAGE NO. vii

5. CLIMATIC ZONES PAGE NO. viii

6. BOTANICAL HISTORY OF TEHRI AND GARHWAL HIMALAYAS PAGE NO. ix

7. ANALYSIS OF THE MEDICINAL FLORA PAGE NO. xi

8. ENUMERATION OF THE SPECIES PAGE NO. 1 - 114

9. DEFINITIONS OF MEDICINAL TERMS PAGE NO. 115 - 117

10. INDEX TO AYURVEDIC AND VERNACULAR NAMES PAGE NO. 118 - 122

11. INDEX TO BOTANICAL NAMES PAGE NO. 123 - 131

12. CHARAKA AND SUSRUTA CLASSIFICATION OF DRUGS PAGE NO. 132 - 148

13. REFERENCES PAGE NO. 149 - 150

14. PHOTOGRAPHS OF MEDICINAL FLORA PAGE NO. 151 - 180

FOREWORD

Himalaya is the "treasure house" of natural wealth, particularly of medicinal herbs, which take a lion's share in the rich materia medica of Ayurveda.

Many famous herbal drugs of today would have gone in for wider usage decades ago, if folklore and tradition about them had been taken more seriously, since the properties of many of these plants were known in some form or the other to the primitive man. The study of the intrinsic relationship of the homosapien to plants, form the subject matter of Ethnobotany; if one goes through carefully the science of Ayurveda, in one perspective, one would find exactly a similar relationship between man and medicinal plants.

The urge and need to find out a broad based, inexpensive and alternate health care system and the intensive search for nutritional supplements have kindled an interest and promoted studies on traditional medicinal plants in several underdeveloped countries of the world. It is a well known fact that in all the programmes like Medico-botanical surveys, identification, cultivation of medicinal herbs, parmacognostic, Phytochemical, pharmacological, toxicological and chemical studies of herbs the mein thrust is the identification of a therapeutically effective drug. The efficiency of Indian medical plants particularly of those growing in temperate and alpine Himalayas is fairly well known. Ayurveda has included in its materia more than three thousand vegetable drugs and quite a large number of them are found in the Himalayas." ★

It is essential also to compile the regional medicinal plant flora of areas where there is a severe threat to natural vegetation owing to human inhabitation. In that sense, knowledge of the flora of medicinal herbs in Garhwal regions is also equally important. Several Indian and European experts have conducted botanical surveys in this region and more intensive work was carried out by the B.S.I., F.R.I., Dehradun and N.B.R.I.,Lucknow. But these surveys have not been particularly directed towards medicinal plants used in Ayurveda.

This book is an extremely useful addition giving a concise account of the plants of medicinal importance found in Garhwal region. The region includes five hill districts of Uttar Pradesh viz. Dehradun, Tehri Garhwal, Pauri Garhwal, Uttarkashi, Chamoli. Gangotri, Yamnotary, Badrinath, Kedarnath and other centres of pilgrimage situated in this region have always been the symbols of the culture and traditions of India. This area of several thousand sq. miles, has from the time immemorial, lent glory and dignity to the image of India.

★ औषधीनाम् पशभूमि ह्मिवान् शैल सत्तम : ।
तस्मात् फलानि तज्जानि, ग्राह्ये त्कालजानितु ॥ चरक, चिकित्सा, अ. 01-36

During the appointment of Dr. M.R. Uniyal in the survey of Medicinal Plants Unit (Ministry of Health) at Hardwar (U.P) he has intensively and extensively surveyed the Shhivalik Hills and Garhwal Himalayas for about eight years from 1962 to 1969. Thereafter, at Regional Research Centre (Ay.), Joginder Nagar (Himachal Pradesh) he utilized his talents in exploration of medicinal flura of Himachal Pradesh covering Lahul-Spiti, Kinnaur, Kulu-Mandi, Kangra, Chamba, Mandi, Unna and Hamirpur etc. From the year 1974 to 1979 Dr. Uniyal while working as Incharge of the Regional Research Centre (Ay.), Jhansi has undertaken survey work in Bundelkhand area of Uttar Pradesh. Simultaneously he was deputed to undertake Ethno-medico-botanical exploration in the high altitudes areas of Leh-Ladakh and Sikkim Himalayas. Presently, Dr. Uniyal is actively associated in the establishment and development of a Unique Central Medicinal Plants Herbarium and Museum at Central Research Institute (Ay.), at New Delhi to cater the need of Ayurveda Scholars and Modern Scientist interested in drug indentification.

This work will be of a great help to Research students, teachers and pharmaceutists of both Ayurveda and allied medical sciences as well as others working on herbal flora. The book will be very useful for Forest Scientist and Agricultural-Botanists. Apart from its utility, this publication to the average reading seeking information of Ayurvedic plants, the publication will become as an authentic book of reference of abiding value on the medicinal herbs flora of Garhwal region. The present book highlights extensive survey of 570 plants covering 122 families out of which 170 are mentioned in Ayurvedic literature. One of the main features is the first Botanical identification of thirteen plants namely Astavargas, Mansitryas, Bhilotaka (Kumkum), Bhedagandha, Tilvaka, Adhhoguda, Hapusha, Tilaka, Kakadani, Kurubaka, Shivamallee, Jatukanda, Thooneyaka mentioned in Ayurvedic literature.

I congratulate Dr. M.R. Uniyal, for this valuable contribution entitled *"Medicinal Flora of Garhwal Himalayas"* - I wish him all success in his future endeavours.

(V.N. PANDEY)
DIRECTOR
Central Council for Research in
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New Delhi - 110016.

Date : 22.2.88
New Delhi

PREFACE

It is an accomplished fact that the Himalaya is the "treasure-house" or the natural-wealth particularly of the medicinal herbs which are the basis of the Ayurvedic studies. Gandhamadan, Drounagiri, Sumeru-parvat etc. are some of the famous peaks of the Central-Himalaya which store some of the Medicinal herbs of value like Sanjeevani, Vishalakarni, Ajruha, Padma, SomLata, Astavarga etc. Besides the medicinal plants, Himalayan mountain is also an excellent source of several mineral elements and the only source of the 'musk' ("KASTOORI") obtained from "musk-deers" found in this region. The present study of the Garhwal region of the Central Himalaya is, therefore, of considerable importance.

॥ हिम्रवानौवधभूमिनांश्रेष्ठभू ॥ चरक संहिता "चिकित्सा।स्थान"

Caraka has also described the Himalayas as the best habitat for medicinal plant.

'AUSHADHINAMPARABHUMI HIMVANSHAILSATAMA' (Ch.ch.II)

औषधीनां पशभूमि ह्मिवान् शैलसत्तम : ॥ ॥ चरक ॥

The Himalayan herbs are useful for longivity and rejuvenation.

In the 'Samhita' period the Himalayan region was also considered to be most suitable place for organising seminars on Ayurveda for scholarly deliberations and adoptions of the best after due discussion. It will not be an exaggeration to say that Govt. of India has kept alive the tradition of Ayurveda.

The Indian System of medicine, i.e. the Ayurveda, was developed by ancient sages and saints. They generally resided in the interior of the forests surrounded by lust vegetation, for undisturbed meditation; and also to discover useful drug plants growing all around them. No wonder, they might have propagated many of them, as some are even today cultivated near temples, perhaps being very important from medicinal point of view. These ancient abodes of 'Rishis' had, in course of time, become important centres of pilgrimage. Therefore, it would be interesting and worthwhile to study these plants growing around such centres as the usefulness of them is recognised even today.

The efficacy of Indian medicinal plants particularly of those growing in temperate and alpine Himalayas is fairly well known. The Ayurveda has included in its materia medica more than three thousand of vegetable drugs and quite a large number of them occur in the Himalayas.

The several Indian and European workers have conducted botanical surveys in this region, however, more serious survey works have been conducted by the parties of the Botanical survey of India, Northern Circle, Dehradun; National Botanical Research Institute, Lucknow and the Survey of Medicinal plants Unit at Gurukul Kangri, Hardwar (established during 1962 under I.S.M. Department, Govt. of India). The Central Council for Research in Indian Medicine and Homoeopathy, New Delhi (established during 1969) has been organised to promote scientific studies on the Indian Medicines (at present named as Central Council for Research in Ayurveda and Siddha). One of the aim of such studies under the Council is to carry out supplemented countrywide intensive survey of the medicinal plants by the specific field-dates such as the local name, local use, sanskrit name and their distribution, identification etc. of the Medicinal herbs and experimental cultivation of the medicinal plants besides their Chemical and Clinical studies.

The present studies on the medicinal plants of Garhwal Himalayas which include the well-known valleys of Bhilangana, Bhagirathi, Yamuna,Alaknanda and the famous valley of the flowers besides Chakrata, Tons Forest Division Mussoorie etc., have been carried out under the general scheme of Central Council for Research in Ayurveda and Siddha, New Delhi. In the text of the book 600 medicinal plants with their correct botanical name, Sanskrit/Vernacular names/local names together with the specific characters of the species for their easy identification and local distribution, local use etc. have been given, special care has been taken to collect authentic data pertaining to the traditional local names of the drug (their specific usage). The author, has also tried to clarify the botanical and Ayurvedic identity of some of the controversial drugs like Astavarga, Tilowak, Bhillotak, Muramani, Nirvashi, Bhutteshi, Sarpa satla etc. It is hoped that the book would be extremely useful to the Ayurvedic Vaidyas, Research Scholars, Botanists and students of various disciplines, engaged in this type of work.

I am deeply indebted to Dr. V.N. Pandey, Director, Central Council for Research in Ayurveda & Siddha (Ministry of Health and Family Welfare, Govt. of India), New Delhi, who, inspite of his many engagements both National and International, wrote the Foreward of the book and provided necessary facilities. I am also grateful to Late Sh. A.C. Dey, Survey Officer, Erstwhile Survey of Medicinal Plants Unit, Gurukul Kangri, Hardwar for the encouragement and facilities provided during the survey from 1962 to 1969.

I am also thankful to Sh. B.K. Sharma, Joint Director, Shree Vaidyanath Ayurved Bhawan Pvt. Ltd., Jhansi, Nagpur who has given priority for financial assistance for the publication of this book.

I wish to record my thanks to Dr. O.P. Gupta Asst. Director and Sh. Roop Kumar Issar, Research Officer (Pharmacognosy), Central Council for Research in Ayurveda & Siddha, New Delhi for constructive suggestions regarding Botanical identification of the plants. Thanks to Mrs. Promila Pant painly taken necessary corrections in this text. Thanks are also due to Forest Research Institute, Dehradun, Botanical Survey of India, Calcutta and National Botanical Research Institute, Lucknow for their help in the identification of some of the specimens.

I express my deep sense of gratitude to Dr. C. Dwarkanath and Dr. P.N.V. Kurup, the Retired Advisor in Indigenous Medicine, Ministry of Health & Family Welfare, Govt. of India, New Delhi for encouragement and technical assistance.

Lastly I am thankful to the people of Garhwal regions particularly Tribal community who helped in collection of the information during the field work.

(MAYA RAM UNIYAL)

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2. Arya Nagar, Near Arya Nagar Chowk, Jwalapur, Hardwar-249407 (U.P.).

GEOGRAPHIC INTRODUCTION :

The gigantic mountain chain of Himalayas spreading from East to West in the North has a great hold on the cultural life of the people of India. The perennial streams which determine the whole economy of villages of the country, have their origins in Himalayas. The sky-scaling snowy peaks, valleys full of green vegetation, the forest and the mineral wealth has always been great attractions to the pilgrims, tourists and the traders. Since the earliest days of our known history, Himalaya has cast on our people a peculiar spell mixed with awe and wonder. People through ages have gone there for solace, strength and inspiration (whole local inhabitants) lived a simple pastoral life of contentment and peace. Kalidas, the great poet of our ancient scriptures, has described the Himalaya in Kumarsambhava as the soul of God full of mineral and metalic wealth.

The region as a whole enfolds a great variety of land and life differing from one part to the other, largely due to the barriers created by the high altitude mountains and the deep river valleys. On the basis of the heterogenety of the geographic conditions and the cultural life prevailing, the ancient writers and the poets divided it into the five major parts as:

Nepal, Kurmachal, Kedarkhand, Jullandhar and Kashmir.

The Himalayan region of Uttarakhand known as the Central Himalaya, represents the combined areas of the above mentioned Kurmachal and the Kedarkhand presently known as Kumaon and Garhwal respectively. It is situated between the rivers Jamuna and Kali and is bounded by Tibet in the North Nepal in the East, Tarai area of Uttar Pradesh in the South and Himachal Pradesh in the West. It lies between 28o 45' E to 81o 10' E and comprises an area of 19263 sq. miles with a population of about 40,00,000 people. The Region includes eight Hill Districts of Uttar Pradesh viz. Dehradun, Uttarakashi, Tehri-Garhwal, Garhwal, Chamoli, Almora, Nainital and Pithoragarh. Previously there are only five Districts, four being in the Kumaon divisions and the fifth Dehradun district in Meerut Region. But the possible threat by China from the North, after her annexation of Tibet in 1959, necessiated the changes in the administrative set-up of this Himalayan region of Uttar Pradesh, which subsequently resulted in the creation of the three Border Districts administratively integrated into a separate Unit in 1960 came into existence under the name of Uttarakhand and is since then known as the region of Uttarakhand. But this distinction of the names and their political boundaries is only limited to the Government papers, since for the people of this area and those coming from outside, the whole region down from Hardwar upto Badrinath and Yamunotri to Kailash Mansarover is Uttarakhand and is considered to be the most sacret part of this Himalayan region.

Apart from the complexity of the political boundaries, the region of Uttarakhand consists of two cultural areas of Kumaon in the East and Garhwal in the West. There is a slight difference in the dialect and social customs of Garhwal and Kumaon, but they are two similar geographic Units determined by the Principal rivers of this region. The area of the Garhwal culture chiefly occupies the valleys of Bhagirathi, Bhilangana, Mandakini and Alaknanda comprising of the Districts of Uttarkashi, Chamoli, Tehri Garhwal and Pauri Garhwal. In this book the Uttarakhand refers to this Garhwal region only, as it is this part which has been surveyed for the purpose of the work.

This area of about 10,000 sq. miles has from time immemorial bestowed glory and dignity to the image of India. Gangotry, Yamunotry, Badrinath, Kedarnath and other centres of pilgrimage have always been the symbols of the culture and traditions. As said previously, it has been identified in the ancient epics as Kedarkhand, the region of the highest religious importance, where every spot, a Prayag, every streak a Ganga, temples in every turn of path and a Sangam, after every short spell of walk. The greenary of the valley and snowy peaks give the region panorama of the land of Gods with a variety of deities sparkling in a fastinating spirituality and providing an air of their own fragrance.

There are references that this area was originally inhabited by Kiratas, Pulinds, Bhills and other primitive tribes. In the medieval times the Khasas, who are believed to have migrated from Central Asia formed the bulk of the population. They came in large numbers and drove-away the original inhabitants of the place, and those who remained were made slaves. These Khassas made their permanent settlement in the valley of this region and introduced agriculture on the terraces of the slopes of the mountains. Because of periodical invasions by the Arayans from the Indo-Gangetic plain the area divided itself into numerous small kingdom's called "GARHS". It is said that each one of 52 such "GARHS" were known as Garhwal. In 14th century, however, the Raja Ajay Pal of Chandpur state in the Mandakini valley integrated all the Kingdoms into one region and established for the first time, a powerful state of Garhwal.

NATURAL GRANDEUR

The name of Uttarakhand fills the heart with awesome sanctity of the region. The sublime grandeur of its peaks, its deep wooded valleys and its cool crystal streams gives a permanent soothing effects on human hearts and minds. While the Himalaya is the treasure house of scenic beauty. It is also a store house of flora and fauna and rare herbs.

In the mountanious region of Uttarakhand the height has a great hold on the types and the characteristics of the plants which are typical to such regions and frequently differ from one part to another. The Tarai and Bhaber area forms a negligible part and is known for tall and smooth trees like Sal and Sisam, best utilised for timber. The area, being torrid and wet in climate, it is a dense forest full of venomous snakes and scorpions, the beasts like elephants and lions. This malariatic climate renders the human habitation difficult to exist. In the mountains, the pine trees dominate the region between the height from 3000' to 6000 . Some other species like Tun, Sandan, Blackberry, Ulinda and Babila grasses and the creepers are also found scattered in between the pine trees. The surroundings of the chir forest is useful for the location of the T.B. Centres. From a height of 6000' above to 10,000' the pine is replaced by cak, devdar, burans, moru, kharsu, kail and other high altitude trees which are useful in the various warp such as animal fodder, agricultural implements, fire wood and furniture. Devdar is the most valuable tree of this region with a peculiar smell that protects it from the wood-worms.

CLIMATIC ZONES

Burrard and Hayden (1907) divided the Himalayas into three zones; the Great Himalayas, the lesser Himalayas and the Siwaliks. The area selected for exploration lies in the first two zones. The Greater Himalayan ranges are composed of granite and crystalline rocks and are characterised by the presence of snowy peaks, the average height of which exceeds 6,500m. The lesser Himalayan ranges are made of sedimentary rocks such as slate, quartzite, conglomerates and limestone and their altitude ranges between 1800m and 3000m.

From climatic point of view the Uttarakhand Himalayas can be divided into three zones similar to Hooker's three climatic zones of Western Himalayas.

1. **TROPICAL ZONE** - Extends upto an altitude of 1500m., the lower limit of snowfall during winter, annual rainfall averages to 203 cm. The temperature rarely falls below freezing point in December - January and in May it rises to 40o - 56oC. or above. The monsoon starts in the middle of June and lasts upto the end of September. Mist increases the humidity to saturation point. In autumn due to continuous sunshine the humidity decreases. Spring is the hottest season of the year.

2. **TEMPERATE ZONE** - Extends from 1500m. to the upper limit of trees. Here the temperature is lower and precipitation is less with considerable portion of it received as snow. The annual precipitation falls as rain. Autumn is characterised by sunshine and low humidity. During winter the temperature falls below 11°C .. and in spring it rises and the humidity is very low.

3. **ALPINE ZONE** - The alpine zone is above 3600m. Here winters are cold and flowering season for plants is short. Spring and autumn seasons are practically eliminated. Precipitation is very small and is mostly in the form of snow. Winters are characterized by heavy snowfalls. This zone is characterised by large spreading meadows.

BOTANICAL HISTORY IN TEHRI-GARHWAL - In the past, collections of plants from Tehri Garhwal have been made by Davidson, Gamble, Keshwanand and Rupin, Rature and Ganga. Osmaston (1927) published a forest flora of Kumaon. Dudgeon and Kenoyee (1921) described the ecology of Tehri-Garhwal. Recently R.K. Gupta (1955) gave a brief description of the flora of Tehri-Garhwal. In Tehri-Garhwal he confined his studies to Mahasar Tal, Sehsar-Tal, Chandrabadni and Ghansali and described about 250 plant species. A greater part of the valley has however, remained unexplored.

BOTANICAL HISTORY OF NORTH-GARHWAL

Thomes Hardwicks was the first European who made collections of plants from Garhwal in 1796 during his visit to Surinagar (the Capital of Ruler) on a political mission. During the early years of the nineteenth century, William Moorscraft, crossed over the Niti Pass into the Mansarover area and brought back, for the first time, a collection of plants from places far in the interior of the Garhwal-Himalayas. Strachey's and Winter Bottoms' collections have been most comprehensive and included nearly 2,000 species, which were collected between 1846 and 1849 from Kumaon and adjoining parts of Garhwal and Tibet. This collection was distributed in sets to various museums in 1953-55 alongwith provisional catalogue. The original catalogue was reprinted and published in 1882. It was revised by Duthie in 1906, who included in it, the results of previous botanical explorations of the area from the time of Walich, Royle, Falconer, Blinkorth, T. Thomoson and others and also the subsequent collections of Duthie himself who during the years 1884-86, made extensive tours through British Garhwal to North Kumaon and to Nepal. Though the collections and study of these pioneer botanists were very valuable from the point of view of botany and general flora of the region, they did not give information regarding the medicinal uses of the plants.

In recent years, Holdorth and Symthe, who were members of the British Kamaet Expedition of 1931, on their return journey collected plants in the Bhyundar valley and were so impressed with the scenic grandeur and the wealth of flora of the valley, that they named it "the valley of flowers". A list of plants collected during the expedition is included in 'Kamet conquered' (1932). Symthe returned to the valley in 1937 for collecting seeds and bulbs for the Royle Botanic Garden, Edinburgh. He collected more than 250 species, a list of which is given in his delightful book, "the Valley of Flowers" (1938). Ghyldyal (1957) also made two visits to the valley and listed 289 species collected from various parts of Garhwal, including the "Valley of Flowers".

SURVEY OF MEDICINAL PLANTS WEALTH IN HIMALAYAS

Although, several Indian and European workers conducted botanical surveys in this region, more serious work was carried out by the parties of Botanical Survey of India, Forest Research Institute, Dehradun and National Botanical Garden now known as National Botanical Research Institute, Lucknow. But these surveys have not been particularly directed towards medicinal plants used in Ayurveda. It is evident that the medicinal plants survey work was initiated only after the formation of Central Council of Ayurvedic Research in the Ministry of Health (ISM) under which the Survey of Medicinal Plants unit at Gurukula Kangri Hardwar was established at Ranikhet in the year 1964. The main objectives of these survey units were laid down in accordance with the recommendations of the Chopra Committee and other Committees constituted from time to time to assess the medicinal plant wealth of the country. Hence the survey work has to be carried out in the whole country to assess both quantitatively and qualitatively the availability of all the drugs used in the Ayurveda and the Medico-botanical exploration work of the Garhwal Region has been started in the year 1962 to 1969.

This book of "Medicinal Flora of Garhwal Himalayas"is expected to serve as a concise account of the plants of the medicinal importance found in the Garhwal regions. This work will be of great help to the students, teachers, research workers and Pharmaceutists of both Ayurveda as well as other Pathyus working with plant medicine. Botanist, Chemists, Pharmacologists will also be benefitted by studying this work as well as connected references.

ANALYSIS OF THE MEDICINAL FLORA

Following is the number of genera and species of each family recorded with Medicinal flora of Garhwal regions.

S.No.	Families	Genera	Species
1.	Acanthaceae	5	6
2.	Actinidiaceae	1	1
3.	Amaranthaceae	4	9
4.	Anacardiaceae	4	7
5.	Apiaceae (Umbelliferae)	12	22
6.	Apocynaceae	7	7
7.	Araceae	4	6
8.	Araliaceae	1	1
9.	Asclepiadaceae	7	8
10.	Asteraceae (Compositae)	29	44
11.	Balsaminaceae	1	4
12.	Berberidaceae	3	9
13.	Brassicaceae (Cruciferae)	4	8
14.	Betulaceae	1	1
15.	Bombacaceae	1	1
16.	Bignoniaceae	2	2
17.	Boraginaceae	6	7
18.	Buxaceae	1	1
19.	Caesalpiniaceae	4	11
20.	Cannabaceae	1	1
21.	Capparidaceae (Cleomacerae)	2	4
23.	Caprifoliaceae	3	3
24.	Caryophyllaceae	5	14
25.	Celastraceae	3	5
26.	Chenopodiaceae	1	3
27.	Combretaceae	3	3
28.	Commelinaceae	2	2
29.	Convolvulaceae	3	3

30.	Coriariaceae	1	1
31.	Cornaceae	1	1
32.	Corylaceae	2	8
33.	Crassulaceae	2	5
34.	Cucurbitaceae	7	7
35.	Cupressaceae	3	3
36.	Dioscoreaceae	1	1
37.	Dipterocarpaceae	1	1
38.	Dipsaceae	1	1
39.	Droseraceae	1	1
40.	Ebenaceae	1	1
41.	Elaeagnaceae	2	2
42.	Ephedraceae	1	1
43.	Equisetaceae	1	1
44.	Ericaceae	2	4
45.	Euphorbiaceae	8	15
46.	Fabaceae (Leguminosae)	17	27
47.	Fagaceae (Cupuliferae)	1	3
48.	Ficoidaceae	1	1
49.	Fumariaceae	3	5
50.	Flacourtiaceae	1	2
51.	Gentianaceae	7	12
52.	Geraniaceae	1	3
53.	Gesneraceae	1	1
54.	Hippocastanaceae	1	1
55.	Hydrangeaceae	1	1
56.	Hypericaceae	1	3
57.	Iridaceae	1	2
58.	Juglandaceae	1	1
59.	Labiatae (Lamiaceae)	19	28
60.	Lauraceae	3	3
61.	Loranthaceae	2	3

62.	Lycopodiaceae	1	1
63.	Liliaceae	8	17
64.	Linaceae	2	2
65.	Lythraceae	1	1
66.	Malpighiaceae	1	1
67.	Malvaceae	5	11
68.	Meliaceae	1	1
69.	Meiastomaceae	1	1
70.	Menispermaceae	1	1
71.	Mimosceae	3	3
72.	Moraceae	2	6
73.	Myricaceae	1	1
74.	Myrsinaceae	3	3
75.	Myrtaceae	1	1
76.	Nyctaginaceae	1	1
77.	Oleaceae	6	7
78.	Onagraceae	1	1
79.	Orchidaceae	10	19
80.	Oxalidaceae	1	2
81.	Papaveraceae	3	5
82.	Phytolaccaceae	1	1
83.	Pinaceae	3	3
84.	Piperaceae	1	2
85.	Plantaginaceae	1	2
86.	Plumbaginaceae	1	1
87.	Polygalaceae	1	6
88.	Polygonaceae	9	13
89.	Primulaceae	1	1
90.	Punicaceae	1	1
91.	Ranunculaceae	8	26
92.	Rhamnaceae	3	7
93.	Rosaceae	10	22

94.	Rubiaceae	7	8
95.	Rutaceae	7	8
96.	Salicaceae	2	3
97.	Samydaceae	3	3
98.	Santalaceae	1	3
99.	Sapindaceae	3	3
100.	Sapotaceae	1	1
101.	Saxifragaceae	2	3
102.	Scitamineae	3	5
103.	Scrophulariaceae	7	8
104.	Simarubaceae	1	1
106.	Solanaceae	6	10
107.	Staphyleaceae	1	1
108.	Sterculiaceae	3	3
109.	Tamaricaceae	1	1
110.	Taxaceae		
111.	Ternstroemiaceae		
112.	Thymelaeaceae	1	1
113.	Tiliaceae	2	5
114.	Ulamaceae	2	3
115.	Urticacae	1	1
116.	Urticaceae		
117.	Valerianaceae	2	3
118.	Verbenaceae	8	10
119.	Violaceae	1	2
120.	Vitaceae	4	4
121.	Zingiberaceae		

ENUMERATION OF THE SPECIES

RANUNCULACEAE

Aconitum falconeri stapf
Sanskrit Name: Vatsnabh, *Vernacular Name:* Bikh, Meetha-Bis, Bhotia-chanduk.
Habit: An erect, biannual herb 1m. high roots paired, tuberous, upto 3-1/5" in length to 4/5" in thick, entire or divided, tuberhorny, mother tuber much shrunk and wrinkled, leaves lobed, laciniate, sepales blue with very dark tips. Seeds winged. It is growing commonly in moist shade.
F1. July - August. *Frt.* August - Sept.
Distribution: Found in the Sub alpine and alpine zones of the Himalayas in Bhilangana valley at Ponwali, Gangi, Khadari, Pinswad, Tali, Bala ganga valley, Bhagirathi valley at Raithal, Gangotari, Sukee, Harsil, Kushkalayani, Takanoor Range and also found in Yamuna Valley, Mandakini valley and Alakanada valley from 3,000m. to 3,900m.
Parts used: Tuberous root, leaves, flowers.
Extent of trade: Large quantity is collected and sold in the Hardwar, Dehradun and Delhi markets.
Time of collection: October, November.
Local uses: The root is soaked in cow's urine for a week then washed dried and powdered. The powder (0.4 g.) is mixed with marich (Piper nigrum) administered internally in acute non-mallrious fever and also in diarrhoea. Acornte leaves are also used to improve the flavour of country liquor.
An external treatment named Gul (Dahan karma) is employed by local people in the umatism of the joints. Local Bhotiya Amchi is used these poisonous roots and flowers as febrifuge, sedative, antipyretic, and in skin diseases.It is also used with good result in the treatment of muscular rheumatism and neuralgia. The roots are considered to be deadly poisonous. The variety of ***Aconitum latilobum*** stapf, found in Bushahr is also a deadly poison.
Medicinal use: Antiperiodic, antidiabetic, antiphologistic, anti-pyretic, anodyne diaphoratic and diuretic.

Aconitum atrox Mukerhee - (A. balfourii stapf)
Vernacular Name: Bis, Bikh.
Habit: An erect herb 1m. high with blue flowers. Roots paired or ternate, tubberous, conico-cyclindric 1-1/5 to 2-4/5 in long 2/5"' - 4/5" in thick, leaves orbicular, ovate-cordate or sub reniform. Seeds trigonous broadly winged.
F1. July-August, *Frt.* Aug.-Sept.
Distribution: Found sporadic in slopes of Rishi Ganga valley and Dudhatoli from Garhwal to Nepal at altitudes of 2,800m. to 4,200m.
Parts used: Tuberous Root.
Extent of trade: Small quantity is collected and mixed with **A. flconeri** roots and sold in the outside market.
Time of collection: October - November.
Local use: Locally the roots are used as an antiperiodic, diaphoratic and diurctic.

Aconitum violaceum: Jacquem ex stapf.
Vernacular Name: Dudhia-Bis.
Habit: An erect herb with violate-blue sepals. Roots paired, tuberous, fusiform, leaves few , orbicula-cordate, or reniform, palmati.
F1. - August. *Frt.* Sept.-Oct.
Distribution: Sporadic, found in the alpine zone of the Garhwal Himalya from Bhagirathi valley to Kumaon between altitudes of 3,000m. to 4,500m. altitude.
Parts used: Tuberous roots.
Local uses: The tuberous roots are poisonous. Sometime **A.violaceum** is collected and sold in the market by the name of Ativisha.
Note: **Aconitum leave** royle is also found in Bhilangana valley at Ponwali 3,300M.

Aconitum heterophyllum Wall
Sans Name: Ativisha, *Vernacular Name:* Atis, Bhotia - Ponkar.
Habit: An perennial erect herb, leaves orbicular, ovate, cordate, sharply toothed, flowers bright blue, greenish-blue with purple veins, roots tuberous bitter in test and white.
F1. July-Aug. *Frt.* Aug-Sept.
Distribution: Commonly found in the sub-alpine and alpine areas on meadows and slopes. Bhilangana valley at Ponwali, Tali, Kinkoliyakhal, Gangi, Kalayani, Masar Tal, Sahasrutal, Bhagirathi Valley Sukii Amardhar, Gangotari, Yamuna valley at Harkee dun, Jaunsar, Mandakini valley, Kedar Nath, Madamheshwar, Badarina and Nilang-glacier, Mana-glacier between 2,700 M. to 4,000 M. altitude.
Parts used: Tiuberous roots
Extent of Trade: Small quantity is collected and sold in Hardwar, Dehradun and Delhi markets.
Time of collection: October, November.
Local uses: The tubers are non-poisonous and are used in fever. Locally the roots mixed with water are given internally for abdominal pain, diarrhoea and piles. It is much effectively used for infants.
Medicinal use: Anthelmintic, antipyretic, aphordisiac, appetizer, astringent and carminative, useful in cough and indigestion.
Note: Another species **Aconitum violaceum** is collected and sold in the market by the name of Ativisha. **A.palmatum** vikhama is Ayurvedic Prativisha, it is non-poisonous.

Actaea spicate Linn.
Vernacular Name: Mamira.
Habit: A perennial herb 1M. high, leaves ovate to ovate - lanceolate, entire, 3-lobed, flowers white 1/4 in diam., Fruits black when ripe, root horizontal, yellowish.
Fl. - June - Aug. *Frt.* Sept. - Oct.
Distribution: Sporadic found in Rudra Ganga valley, Raithal in Bhagirathi valley, Alaknanda valley between 2,700 M to 3,400 M.
Local uses: Locally the powdered leaves, stems and flowers are used as insecticides.
Medicinal use: The whole plant is largely used in medicines in foreign countries. The roots are said to be violently emetic and purgative. The toxic effect of the plant is due to the oil present in the berry. Root - Nervesedative, emetic, purgative.

Anemone obtusiloba D.Don.
Vernacular Name: Agli, Ratan-jog.
Habit: A perennial herb 60 cm. high with woody root stock. Leaves radical and deeply cordate, Flowers white.
Fl. - June, July. *Frt.* July onwards.
Distribution: Common in temperate and alpine areas of the Bhagirathi valley, Bhilangana valley and Harkidun in Yamuna valley between 1800 m to 3600 m.
Local uses: Locally root is acrid and is stated to be used as a blistering agent in Bushahar. It is likely to produce sores and scars.
Medicinal use: The seeds if given internally, produce vomiting and purging. Toxicity is also reported in this plant.

Anemone vitifolia Ham.
Vernacular Name: Agali.
Habit: A perennial herb with robust pubescent Stem, Flowers white.
F1. June - July. *Frt.* Sept. Oct.
Distribution: Common found in temperate regions on roadside, Partapnagar, Kanatal, Ghonti, Ghutu, between 1500 m to 2700 m.
Local uses: Locally root is used as a blistering agent.
Note: Anemone rivularis Buchh-Ham are also found in this region.

Aquilegia pubiflora Wall ex Royle
(Aquilegia vulagis Linn.var. Pubiflora Hook f.)
Habit: A perennial thinly erect herb. stem - branched, Leaves deeply 3-lobed, flowers drooping yellow - green-pale.
Fl. June, July, *Frt.* July onwards.
Distribution: sporadic in temperate and sub-alpine Himalaya at Tehari Garhwal - Gangi Raithal, Herkedun, between 2,700 M. to 3,300 M.
Medicinal use: The whole plant is poisonous and it is found to contain a cyanogentic compound.

Caltha palustris Linn.
Vernacular Name: Maniru.
Habit: An aquatic, perennial herb 30 to 60 cm. high. Leaves glossy radical, orbicular, root horny yellowish flowers - yellow.
Fl. May - Aug. *Frt.* Sept. onwards.
Distribution: Commonly found in Sub-alpine and alpine zones of Garhwal Himalaya between 2,700 M. to 4,000 M.
Medicinal use: Root is considered as acrid-poisonous.

Clematis nepaulensis DC.
Vernacular Name: Ghantiali, Jali,
Habit: A glabrous climber, Flowers - Greenish in axillary.
F1. Feb. - May. *Frt.* May onwards.

Distribution: Commonly found in the temperate zones of area, usually in moist shady ravines between 1500 M. to 2400 M. altitude.

Local uses: locally some places of Garhwal, the leaves are said to be used as irritating agent.

Medicinal use: The whole plant is acrid and poisonous due to the presence of anemonin. Leaves - deleterious to skin.

Note: In Garhwal Himalaya following species are found between 1,800 M to 2,700 M. altitude.

1. **Clematis montana** - Buch-Ham.
   Climbing shrub, flowers-white.
2. **C. barbellata** Edgew.
   A glabrous climbing shrub, Flowers dull-purple.
3. **C. acuminata** DC.
   A large slender climber, Flowers - white.
4. **C. buchaniana** DC.
   A woody climber, flowers white, some of the species are locally known as a poisonous.

Delphinium denudatum wall ex Hook f.

Unani Name: Jadhebar.

Habit: An erect glabrous herb, leaves radical, orbicular, pinnately lobed, flowers - pale, blue, follices many seeded.

Fl. - May - June. *Frt.* onwards.

Distribution: Commonly found in moist and shady places and temperate regions of Garhwal Himalaya between 1,500 M. to 3,300 M.

Local uses: Locally the roots decoction is used in abdominal pains and Hook worms infection.

Medicinal uses: Root - expectorant, & bitter, stimulant, tonic. The roots are also used for destruction of body parasites. They have been the cause of poisoning in children cattle and horses. The alkaloides found in this genus are ajacine, ajaconine, delphinine.

Note: **Delphinium denudatum** is known as Nirvishi.

Delphinium vestitum wall ex Royle.

Vernacular Name: Juha.

Habit: An erect densely hairy herb, leaves radical, pamately 5-7 lobed, flowers dark-purple.

Fl. May - July. *Frt.* - July - Aug.

Distribution: It is found in sub-alpine meadows at Gangotari, Kedar-Nath, Bhilangana valley, Herkeedun between 2,400 M. to 3,600 M.

Local uses: The leaves are said to be poisonous particularly when eaten by goats, causing toxic effects.

Medicinal uses: The roots are cooling, stimulant, brain tonic, and useful in curing the cough, also useful in diseases of blood, tooth-ache and piles. The leaves are said to be poisonous to goats.

Delphinium brunonianum Royle.

Vernacular Name: Kasturi, Nepari, Bhotia - Ladara.

Habit: An erect musky herb, stem 15-30 cm. glabrous, leaves 3-4" in diam, 5 fid to the middle. Flowers large pale - blue, hairy.

Fl. July - Aug. *Frt.* Sept. Oct.

Distribution: Sporadic found in Garhwal Himalayas in moist alpine slopes between 4000 M. to 4,600 M.
Local uses: This plant is prized for its strong musky scent. Locally it is considered as poisonous. Flowers are used in throat diseases.
Medicinal uses: The juice of the leaves is used as an insecticide.

Paeonia emodi wall ex Royle.
Vernacular Name: Chandayra, Mamekh Hindi - Udsalap.
Habit: An glabrous perennial herb, 30 cm. to 1 M. high, root thick fleshy roots, leaves large oblong or lanceolate ; flowers large - white, 3-4" in diam. Follicles rarely 2, ovoid.
Fl. - March - April. *Frt.* June - Sept.
Distribution: Commonly found in the temperate Garhwal Himalaya in Bhilangana valley, Ghutiu and it is also found in tons Division between 1,500 m. to 2,700 m.
Local uses: The roots are applied on cuts. Powdered root is also applied in foul ulcers to kill maggotes. Leaves and young shoots are cooked and eaten as vegetable to cure dysentery.
Medicinal uses: The tuberous roots of this plant, like those of the P. officinalis Linn. are highly useful for utrine diseases, colic pains, droposy and epilepsy and has similar active principles. The seeds are emetic and cathartic.
Note: Small quantity of the root is collected and consumed locally.

Ranunculus sceleratus Linn.
Sanskrit - Kandira.*Vernacular Name:* Shim.
Habit: An erect glabrous much branched annual herb, stem - 30 cm. to 1 M. high. Leaves usually 3 partite, lobed or sessil. Flowers - yellow.
Fl. - April - June. *Frt.* June - Sept.
Distribution: Commonly found in river banks in lower valleys upto 2,100 M.
Local uses: Locally the fresh plant is highly acrid, poisonous and juice is irritant.
Medicinal uses: The bruised leaves when applied to the skin raise blisters. Whole plant is emmenagogue, galactagogue.
Note: Kaiyadev has mentioned kandir as the synonym of Karvallaka (Momordica charantia).

Ranunculus arvensis Linn.
Vernacular Name: Chambul.
Habit: An erect much - branched annual glabrous or silky herb. Leaves radical obovate 3-5 toothed. Flowers pale - yellow.
Fl. - June - July. *Frt.* Aug. - Sept.
Distribution: Found in Garhwal Himalaya in moist region throughout the valleys between 1,500 m. to 2700 M. elevation.
Medicinal uses: The leaves has been found to contain cyanogenetic compounds. The juice of the plant is produced blisters.
Note: **Ranunculus pulchellus** Mey : and **R. laetus** wall. their species are also found in Kedar-Nath and Tehari Garhwal between 2,100 M. to 3,800 M. altitude.

Thalictrum foliolosum DC.
Sanskrit: Pitamoola, *Vernacular Name:* Mamiro.

Habit: A tall herb, stem glabrous, leaves pinnately decopound, 3 lobed, sharply decompound. Flowers - white, pale, green, roots - Nodular, yellow.
Fl. - July, August. *Frt.* August - Sept.
Parts used: Root.
Distribution: Commonly found in temperate and sub-alpine areas between 1200 M. to 2800 M. at Kanatal, Chamba, Ghutu and throughout the valleys.
Local uses: Locally the roots are used as remedy in opthalmia and also as febrifuge. It is also useful in piles,discoloration of the skin and Decoction is used in abdominal pain.
Medicinal use: Root-tonic, opthelmic, purgative, diuretic, febrifuge and good remedy for antomic dyspepcea.
Extent of Trade: Root is collected in small quantity and sold in the Hardwar, Dehradun and Delhi market.
Note: Sometime **Thalictrum foliolosum** Dc. roots are sold in the market in the name of Trayamana.

Thalictrum minus Linn.
Habit: An erect herb 60 cm. to 1M high, roots yellowish, flowers yellowish - green.
Fl. - June-July. *Frt.* Aug. onwards.
Distribution: Sporadic found in temperate zone at Tali, Rudar- Ganga Valley ranging from 2,400 m to 3,600 m elevation.
Local uses: Roots are used as remedy in opthalmia and abdominal pain.
Note: Following species are found in Garhwal Himalayas between 2,100 m. to 4000 M.

1. **Thalictrum reniforme** wall at Ponwali 3000 M altitude.
2. **T.cultatum** wall spp. **platycarpum** Hook f. (Kedar-Nath, 3,300 M.)
3. **T:rostellatum** Hook, f. Kantal 2,100 M. altitude.
4. **T. javenicum** blume. Tehari Garhwal between 1900 M 2400 M. elevation.

MENSPERMACEAE

Cissampelos Pariera Linn.
Sanskrit: Patha, *Vernacular Name:* Pardhi,
Habit: A climbing softly pubescent shrub. Leaves arbicular, reniform or cardate, roots nodular, flowers small male cymes long stamens 4,-female flowers clustered in the axil of arbicular bracts crowded in long axillary racems.
Fl. May-Aug. *Frt.* Oct.-Nov. Parts used - Whole plant.
Distribution: Commonly found in lower valleys in open and shady areas of the forest at Garhwal areas. It is growing between 700 M. to 1800 M. altitude.
Local uses: Locally the root decoction is used in abdominal pain in the dose of 15 to 25 ml. twice daily.
Medicinal uses: Anthelmintic, antihistaminic, anti-pyretic, astringent, bitter, cardio-tonic, diuretic and stomachic.
Note: Small quantity can be collected from this area.

Cocculus hirsutus Linn.
Sanskrit Name: Patal-Garudi.
Habit: A climbing under shrub tomentose, branchlets leaves very variable in size male and female flowers greenish and axillary.
Fl. - Feb-March. *Frt.* May-June.
Distribution: Sporadic in foot of Himalaya is thorny forest up 1000 M. height.
Local uses: Locally the roots are used in rheumatism and venereal diseases. The juice of the ripe berries makes a durable bluish-purple ink.
Medicinal uses: Root refrigerant laxative, tonic, aterative expectorant, bitter, juice of the leaves when mixed with water forms a jelly and is taken as cooling medicine for gonorrhoea.

Cocculus laurifolius DC.
Vernacular Name: Tilpharo.
Habit: A large ever green shrub leaves 3-6" in long, entire dark-green and shining. Flowers - minute and yellow drupe black when ripe.
Fl. April, June. *Frt.* Aug. - Sept.
Distribution: Commonly found in moist and rainy places throughout the valleys in Garhwal upto 1,800 M. height at Ghonto, Ghutu Uttar-Kashi etc.
Medicinal uses: The bark and leaves of the plant contain toxic. principles.

Stephania glabra (Roxb.) Miers
Vernacular Name: Gindaru, Rajapatha.
Habit: A climbing shrub, roots bulbous, leaves broad ovate or orbicular,flowers yellowish green in exillary, compound pedunculate, umbels, Drupe pisciform, red.
Fl. June-Aug. *Frt.* Sept. Oct.
Distribution: Commonly found in revines at Ghonti, Ghanshali, Ghutu and throughout the valleys between 800 M. to 2,400M elevation.
Medicinal uses: Root-acrid, used in pulmonary tuberculosis, asthma, dysentery and fever. The roots are also used in urinary diseases.
Note: A good quantity of the roots are collected for sale from this region.

Stephania hernandifolia (Willd) Walp.
Sanskrit: Ambashtha, *Vernacular Name:* Tamarki
Habit: A climbing plant, leaves 2-6" diam, triangular, base truncate or sub-cordate, glabrous, flowers greenish-white, axillary drupes red.
Fl. - June-July, *Frt.* Oct-Nov.
Distribution: Sporadic found on trees and tall shrub at Chamoli Garhwal, Uttar Kashi, Tehari Garhwal between 1800 M. to 2400 m. elevation.
Parts used: Root, leaves.
Medicinal uses: The The roots are slightly bitter, astringent and useful in fever, diarrhoea, urinary diseases, dyspepsia. Leaves are used in opening up boils and as depelatony.
Note: **Stephania elegans Hook f.** This climber also found in throughout the valleys upto 2,400 M. altitude.

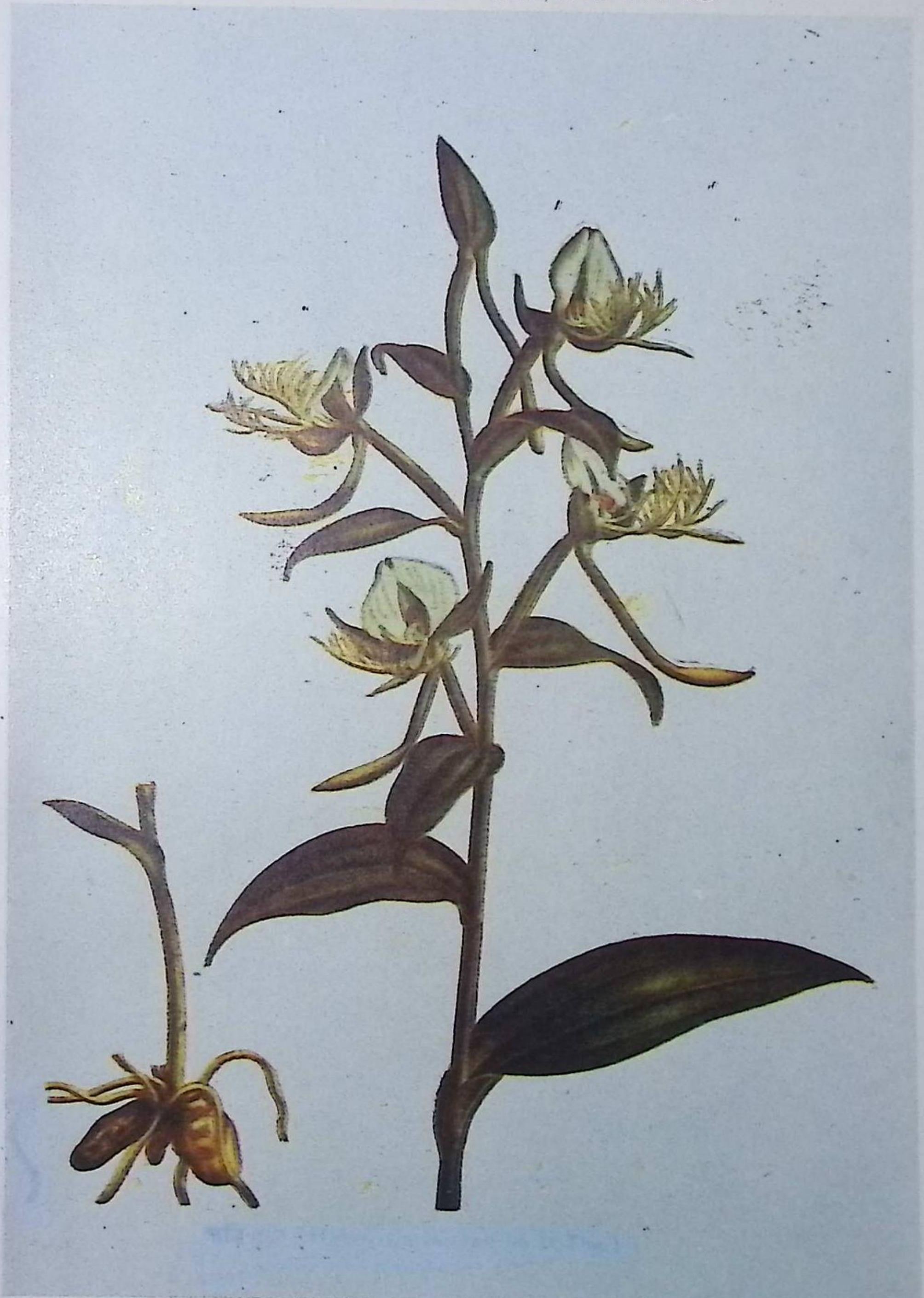
Tinospora Cordifolia Miers.
Sanskrit: Guduchi, Vernacular Name: Giloe.
Habit: A large climbing plant, hanging aerial roots, bark-grey corky, flowers- yellow, males fascicled, females usually solitary, glabrous, drupes 3/4 in diam. cherry red.
Fl. April-June. *Frt.* Oct-Nov.
Parts used: Stems.
Distribution: Commonly found in lower valleys in Garhwal upto 900 M. altitude.
Local uses: Locally stems is used in fevers and anaemia.
Medicinal uses: Alternative, antipyretic, aphrodisiac, bitter, diuretic, febrifuge, stomachic and tonic. It is also useful in diabetes, enteric fever, gonorrhea, jaundice, leprosy, piles. It is a good blood purifier. Guduchi-satwa the glucoside extract prepared from Guduchi is a favourite tonic of the Ayurvedic Pharmacopoea is much used as an aphrodisiac and tonic.
Note: **Tinospora malabarica** Miers (Gurch) - A large climber is also commonly found in throughout the valleys on ravines and moist slopes between 900 M. to 2,100 Mt. altitude, stems are collected and used as substitutes for **T. cordifolia** Miers.

BERBERIDACEAE

Berberis floribunda (wall) G. Don. (B.aristata DC.)
Sanskrit: Daruharidra, *Vernacular Name:* Kingora, Kilmori.
Habit: A thorny shrub, branches pale-yellowish grey, leaves obovate, entire or distanty sharp toothed small, pale-green. Flowers-Yellow, long peduncles in simple racemae. Berries ovoid, bluish - purple.
Fl. May-July. *Frt.* July onwards.
Parts used: Stem, root, bark, fruits.
Distribution: Common in open forests on warm aspects through the valleys in temperate regions between 1800 M. to 2,800 M altitude.
Local uses : Locally the roots decoction is used as remedy in eye-diseases. It is one of the best medicine for the treatment of eczema and skin diseases. The root and bark is boiled in water strained and evaporated till a semi-solid mass is obtained. This is called Rasaunt. It is fairly soluble in water. It is useful in eye trouble and haemorrhage and in piles.
Medicinal uses: Antimalarial, fabrifuge, antiseptic, anti-phlogistic, blood-purifier, diuretic used in conjunctivities, menorrhagia, jaundice, urino-genital disorders and ulcerative conditions.
Extent of Trade: Large quantity of root and bark is collected and sold in Hardwar, Dehradun and Delhi markets.

Berberis asiatica Roxb. ex. DC.
Vernacular Name: Kingori.
Habit: A much branched shrub, bark pale-blue, flowers pale-yellow, in corymbose, Berris - black and red.
Fl. - March - April. *Frt.* May - June.
Distribution: Abundant in open forests and gregarious on waste lands near cultivation, throughout the valleys 900 M. to 2,100 M. altitude.

INTERESTING ORCHIDS OF GARHWAL HIMALAYAS



Habenaria intermedia D Don

Medicinal uses: The alkaloid "Berberine" is very useful medicine. The extract from the stem called "Rasont" is useful in eye diseases.

Berberis lycium Royle
Vernacular Name: Kingore.
Habit: An erect shrub, gregarious in habit, twigs yellowish, flowers dull, yellow berries bluish, violate.
Fl. March - April. *Frt.* May - June.
Distribution: Fairly common waste ground near cultivation throughout the valleys between 800 m. to 1,900 m.
Local uses: Locally the roots are used as a daru-haridara for eye diseases.

Berberis chitria Ham. ex Ker.
Sanskrit: Daruharidra, *Vernacular Name:* Totaru.
Habit: An deciduous shrub, branches usually bright red. Flowers yellow, often tinged with red in a corymbosely raceme Berries red.
Fl. May-June. *Frt.* July-Aug.
Distribution: A common shrub growing in Ock forest, under fairly dense shade, through the valleys in Garhwal Himalayas between 2,100 M. to 3,300 M. altitude.
Note: The following species are also found in sub-alpine and alpine Himalayas between 2700 M. to 3,800 M.

1. **Berberis edgeworthiana** Schn.
   (**Berberis vulgaris** Linn) A small shrub flower yellow.
2. **Berberis petiolaris** wall ex G.Don.
   A small shrub with soft, brown bark flowers pale-yellow, barries - oblong, red when ripe.
3. **Berberis jaeschkeana** C.K.
   A small shrub, with yellow flowers and oval-red berries.
4. **Berberis coriaria** Brand.
   Small shrub with yellow flowers.

Mohonia nepaulensis DC, (Berberis nepalensis Spreng)
Vernacular Name: Khoru.
Habit: An erect ever-green shrub, with soft corky bark.
Flowers: yellow, Pedicels .3 - .5 in long, petals 6 in two series Berries purple, elliptic.
Fl. - March-April. *Frt.* May-July.
Distribution: Fairly common in moist shady on Oak forest in Garhwal Himalayas between 2,000M to 3,000M. elevation.
Local uses: Locally the ripe fruits are eaten. Roots are useful as antiseptic.

Podophyllum hexandrum Royle
Sanskrit: Vantrrapusli, Aindri.
Vernacular Name: Vankakhharu, Bankarkatee.
Habit: A glabrous succulent erect herb, leaves 3-5 lobes to the middle or base, sharply toothed.

Flowers white sometime pink, roots - Rhizomatic perinnial.
Fl. May-June. *Frt.* Aug-Sept.
Parts used: Root, fruits.
Distribution: Sporadic found in the sub-alpine and alpine zones at Bhagirathi valley, Raithal, Dayara, Bhatwari, Bhilangana valley, Ponwali, Tali, Ganghi, Yamuna Valley, Herkee Dum in Oak moist forest and slopes between 2,700 M. to 3,600 M. elevation.
Local use: Locally the ripe fruits are eaten, roots are used as purgative.
Medicinal use: The root stock of this plant contains the podophyllum resin which is used as a cholagogue, purgative.
Podophyllum is reported to be useful in skin diseases, and also in tumerous growths. This drug is effective in curing cancerous tissues.
Podophyllin greatly irritates the eyes and the mucous membranes.
Extent of trade: Small quantities are collected and sold in Dehradun and Delhi markets.
Note: Thakur-Balwant Singh has recommended that this plant is divine drug as possibility of Aindri. Sh. P.V. Sharma mentions that Podophyllum is vantrrapusei.

PAPAVERACEAE

Argemone maxicana Linn.
Sanskrit name : Swarnashiri, *Vernacular Name :* Satyanasi.
Habit: A roubst, prickly herbaceous annual, 30-120 cm. high Latex yellowish. Flowers bright yellow.
Fl. Jan.-March. *Frt.* April-onwards.
Distribution: An American weed, naturalized in India, is distributed all over Garhwal region upto 1500 m. altitude often growing along roadsides.
Medicinal uses: Yellow juice of the plant is used in the treatment of dropsy, jaundice and eye diseases. The whole plant, except seeds, contains the alkaloides, berberine and proto-pine.

Meconopsis aculeata Royle.
Vernacular Name: Kaliharu, Bhotia - Sarchhing.
Habit: An erect annual, 30-60 cm. high. Flowers purplish blue or grayish to steel-blue-forming a racemose cymes. This plant is popularly known as 'Himalayan blue poppy'.
Fl. July-Aug. *Frt.* Aug.-Sept.
Distribution: Sporadically distributed at Kedarnath, Ponwali, Herkedun etc. extending from 3000 m. to 4200 m. usually on alpine slopes on rocky soils.
Medicinal use: The root is considered to be 'Narcotic' and poisonous, although, chemical analysis did not indicate any alkaloid.
Local uses: Locally whole plant is used as blood purifier and useful in hypertension.

Meconopsis nipalensis DC.
Habit: An erect, glaucous herb. Stem hairy 60-150 cm. high flower purplish or pale blue.
Fl. & Frt. July-Sept.
Distribution : It is found growing sporadically in rocky slopes at Nilla Valley at 3600 m. altitude.
Local uses: Bhotia amchi whole plant is used as stimulant. Roots are used as a narcotic.

Meconopsis robusta Hook. f. & T.
Habit: A tall herb with yellow flowers.
Fl. & Frt. July-Sept.
Distribution: Sporadically distributed on grassy slopes at Kedar Nath 3300 m. (Uniyal 4437) altitude.
Local use: Locally the roots of this plant are regarded as poisonous and narcotic.
Note: It is interesting to record that this plant has been collected for the first time from this valley. Earlier Duthie collected it from British Garhwal on 18.9.1983.

Papaver somniferum Linn.
Sanskrit: Ahiphen, *Vernacular Name:* Aphim.
Habit: An erect, glaucous annual, 60 cm. - 1.2 m. tall. Flowers large, white. Seeds usually white.
Fl. & Frt. July-Sept.
Distribution: This plant is cultivated on large scale in open areas at Jaunsar, Raithal etc. between 1500-2100 m. altitude.
Medicinal uses: The milky juice from immature fruits yield opium. Ripe and dry fruits, contain only small quantity of alkaloides and therefore, their narcotic properties are mild.
Local use: Locally the seeds are used as tonic. Small quantity is collected and sold in the market.

FUMARIACEAE

Corydalis govaniana Wall.
Vernacular Name: Indarjata.
Habit: An erect herb with thick root-stocks; flowers bright yellow; capsule ovata, 1.2 cm. in diameter.
Fl. & Frt. July-Sept.
Distribution: It is found commonly growing in sub-alpine and alpine zones at Ponwali, Raithal, Gangotar and Kedarnath between 2700m. to 3600m. altitude on moist damp slopes.
Medicinal uses: The roots are used as a tonic, diuretic, alterative and are also prescribed for syphilitic patients. Roots are used in Amachi system of medicine.
Note: Small quantities are collected in Garhwal region.

Corydalis ramosa Wall.
Habit: An erect herb; flowers yellow; capsules ovata .75 cm. in diameter.
Distribution: It is found growing sporadically in the alpine zones of the area upto 3000m. altitude.
Medicinal uses: Locally the roots are used as febrifuge.

Fumaria indica (Haussk) Pugsley
Sanskrit: Parpata, *Vernacular name:* Papara.
Habit: A diffuse annual herb with pink flowers; fruit globose, 1-seeded.
Distribution: A common weed of cultivated fields distributed throughout the valleys of the area upto 2,100M.
Fl. & Frt. Feb.-May.

Medicinal uses: The whole plant is diuretic, anthelmintic and blood-purifier. It is useful in dyspepsia, scropulous skin diseases and liver complaints. Seeds are useful in body-pains.

CLEOMACEAE (Capporaceae)

Cleome gynandra Linn. (=Gynandropsis pentaphy 11a DC.).
Vernacular Name: Jakhiya.
Habit: A strong smelling weed with purple white flowers.
Fl. Aug. *Frt.* Nov.
Distribution: Abundant throughout the warmer parts of the foot hill of the Garhwal himalayas.
Medicinal uses: The seeds have anthelmintic properties. The black seeds are used in Indian Medicine in the same way as the mustard seeds. The decoction of the root is used in fever.
Note: **Cleome viscosa** Linn. also found in this region. Reddish and brown seeds are locally used as spice. It is doubtful drug, P.V. Sharma recommended as Ajashrigi or Ajagandha.

CAPPARACEAE (Capparidaceae)

Capparis horrida Linn.
Vernacular Name: Hinsa, Kalhins.
Habit: A tall shrub, flowers - white, stems numerous purple. Fruit: Sub globse.
Fl. Feb-May. *Frt.* Aug-Sept.
Distribution: Common in scrub forest in outer part of Garhwal Himalayas upto 1,200 M.
Local use: Locally roots are used as irritant. It also produces blisters.

Capparis sepiaria Linn.
Sanskrit: Hinsra, *Vernacular name:* Hainsa.
Habit: A large climbing shrub. Flowers - White, Fruit - black on a short gynophase.
Fl. - June, July. *Frt.* Oct.-Nov.
Distribution: Common in scrub forest on foot hill of the Garhwal Himalaya upto 1000 M.
Local use: the leaves and twigs are eaten by goats and cattle.
Note: It is doubtful drug Dalhanahas been identified as Himasra. Himasra is bitter and usna virya so it may be concluded that **Caparis sepiaria** Linn popularly known as Haimsara.

Capparis spinosa Linn.
Sanskrit: Vyaghranakhi, *Vernacular Name:* Kiari, Bhotiayas- Kabara
Habit: A small trailing shrub, flowers: 1-3 in diam. white, fading into purplish red.
Fl. May-July. *Frt.* Cold season. Fruits: red inside when ripe.
Distribution: Sporadic on dry hot rocks at low elevations in the hills of Garhwal Himalayas.
Local use: Leaves and fruits are favourite food of goats and sheep. Roots are used in Kas, spleen disorders and as an anthelmtintic. Bhotiyas unripe fruits are used as vegetables by Bhotiyas.
Note: It is also doubtful used as Vyagharnkhi.

Crataeva nurvala Ham. (= **Crataeva religiosa** Frost.)
Sanskrit: Varuna, *Vernacular Name:* Barna.
Habit: A medium sized tree, dark grey, fairly smooth. Leaves tri-folite, acuminate, Flowers - yellowish - white, Berry ovoid, pale - brown or red when ripe.
Fl. March-May. *Frt.* - Cold season
Part used: Bark.
Distribution: Sporadic in scrub forest on foot hill of the lower valleys upto 100M.
Medicinal use: Anthelmintic, diurutic, carminative, demulcent, laxative and stomachic, used in blood diseases, constipation, calculi flatulence and useful in urinary disorders. In traditional medicine - It is employed extensively internal abscesses.

BRASSICACEAE (Cruciferae)

Capsella bursa-pastoris (Linn.) Medic.
Habit: An erect annual herb 15-40 cm. high. Flowers - small white.
Fl. June-July. *Frt.* Aug. onwards.
Distribution: Common at Ponwali, Raithal, Kedarnath, Mana ranging from 2800M to 3000M altitude.
Medicinal use: The plant is used for controlling different types of haemorrhage. It lowers the blood pressure and is used as antiscorbutic. It is also useful in diarrhoea and dropsy.

Cardamine impatiens Linn.
Habit: An erect annual herb, 2.5 - 4.5 cms. Flowers white crowded petals shorter than the sepales.
Fl. June, July. *Frt.* - Oct.
Distribution: Common throughout the area in temperate region upto 2100 m. altitude.
Medicinal use: The whole plant is used as a stimulant, diuretic and febrifuge.
Note: **Cardamine inayatii** E. Schu and **C. macropylla** Willd are also found in this region.

Barbarea vulgaris R.Br.
Habit: A perennial, erect branched, herb : flowers yellowish.
Fl. July, *Frt.* Sept.
Distribution: Spradically growing in the sub alpine and alpine areas at Kedarnath, Ponwali, Badrinath, Herke Dun and Bhagirathi Valley extending upto 3600 m. altitude.
Medicinal use: Locally the plant is used as cardiac stimulant. The leaves are vulnary and the plant as a whole is stimulant and antiscorbutic, whole plant has distinct aroma.

Megacarpaea Polyandra Benth.
Vernacular Name: Barmula
Habit: A perennial erect herb, 10 cm. 1 1/2 m. high. Root thick and annulate. Flowers yellow, fragrant.
Fl. & Frt. June-Aug.
Distribution: Sporadically distributed in the alpine areas at Kedar Nath, Tali, (Tehari) Bhagirathi Valley and Herke Dun ranging from 3600 to 4000 m. altitude.
Medicinal use: Root decoction is used as a febrifuge and as a tonic for bulls.
Local uses: Locally the leaves are eaten as a favourite vegetable. Small quantity of the plant is collected and locally consumed.

Sisymbrium strictum Hook f.
Habit: An erect herb 30 cm. to 1 m. high. Flowers orange pink.
Fl. Sept.-Oct.
Distribution: It is found growing sporadic in sub-alpine zones along Ghuttu, Chakarata and Bhagirathi valley, 1800 M. to 3000 M.
Medicinal use: The seeds are used as an expectorant, stimulant and also as an anti-asthmatic. The plant is externally used as a stimulant in the form of a poultice.
Note: **Sisymbrium Wallichii** Hook f and **S.shopia** Linn.. also found in temperate Himalayas up to 2,800 m. altitude.

VIOLACEAE

Viola biflora Linn.
Habit: A small, glabrous pubescent erect annual herb. Flowers yellow.
Fls. - Feb. - Aug.
Distribution: It is often found growing sporadically, in marshy slopes at Chandrabadni, Bhilagana valley and Kedarnath extending from 2700 m. to 3600m. altitude.
Medicinal use: Locally the roots of the plant are used as emetic and the leaves as laxative.

Viola Serpens Wall.
Habit: A small herb with long petioled ovate leaves. Flowers violet-lilac.
Loc. N. Dundibirali., Unani N. Vanafsha.
Fl. & Frt. Feb. - Aug.
Distribution: Common in marshy slopes throughout the valleys, ascending upto 2700 m.
Medicinal use: The whole plant is used as a demulcent, diaphoretic, expectorant, in lung troubles or blood disorders. The flowers and leaves contain an essential oil. The flowers are collected in the name of Gul-Vanafasha.
Note: Small quantity of the drug is collected from the area and sold in the market. The violet perfume is perhaps the most popular of all perfumes in the market.

FLACOURTIACEAE

Flacourtia jangomas (Lour) Raeusch.
Sans: Pracinamalaka, *Vernacular Name:* Pachnala,
Habit: A small evergreen tree. Flowers very small in irregular racemes.
Fl. - March. *Frt.* April-May.
Distribution: Sporadic on the foot hills throughout the area.
Medicinal use: The bark is used medicinally and the ripe fruits are eaten.

Flacourtia indica (Burm. f.) Merr.
(**Flacourtia ramontchii** L.)
S.N: Bikantaka, *Vernacular Name:* Kango.
Habit: A thorny, deciduous small sized tree. Flowers small, greenish-yellow. Fruit globose red or dark brown when ripe.

Fl. & Frt. April-May.
Distribution: Common in tropical zones throughout the area, extending upto 1000m. altitude.
Medicinal use: The fruits are used in jaundice and enlarged spleen.
Local use: Locally the fruits are eaten. Gum from the plant mixed with other ingredients is used in Cholera.
Distribution: Sporadic on the foot hills throughout the area.

DIPTEROCARPACEAE

Shorea robusta Gaertn. f.
S.N. Shal,*Vernacular Name:* Sal.
Habit: A large deciduous tree, Flowers sub-sessile in terminal racemes. Yellowish - white, fragrant.
Fl. & Frt. April-May.
Distribution: Common in tropical zones at Jaunsar along foot hill upto 1500 m. altitude.
Medicinal use: The resin and oil obtained from the plant is used in medicine. Resin-astringant detergent, used in dysentery.
Local use: The flour made out of the fruits is eaten by the poor class of people at the time of scarcity.

POLYGALACEAE

Polygala chinensis Linn.
Habit: A pubescent, erect annual 10 cm. high. Flowers yellow in axiliary racemes.
Vernacular Name: Meradu
Fl. & Frt. May-August.
Distribution: Sporadically distributed at Chamba, Tehri, Chakrata and Ghuttu extending upto 2000m. altitude.
Medicinal use: The whole plant is used in cases of fever and dizziness. The plant is useful in catarrhal affections and is chewed to expel phlegm from the throat and for provoking cough.

Polygala crotalariodes Buch. - Ham. ex DC.
Habit: A perennial, hairy herb-with woody root-stocks.
Flowers purple in axillary racemes. Seeds hairy.
Fl. May-June. *Frt.* June-onwards.
Distribution: Common in sub alpine ranges at Gangi, Raithal, Chakrata, Kanatal extending from 1500 m. to 2400 m. elevation.
Medicinal use: The plant is used as a substitute for **Polysala Chinensis** Linn.
Note: Following species are also found in Garhwal Himalayas between 1200M. to 3000M. altitude.

1. **Polygala tatarinowii** Regel - Small herb, pink flower.
2. **P. furcatu** Royle.Herb, yellow flowers.
3. **P. abyssinica** R.Br. Erect herb, purple flowers.

4. **P. persicariaefolia DC** - Small herb, purple flowers.

CARYOPHYLLACEAE

Stellaria aquatica Scop

Habit: A pubescent, perennial herb, 30-90 cm. high. Flowers is axillary or terminal cymes.

Fl. & Frt. July - Aug.

Distribution: It is often found growing in moist habitat along streams etc. at Massorie and Kanatal between 1800 to 2100 m. altitude.

Medicinal use: The whole plant is considered useful in the treatment of fistular diseases.

Stellaria media (Linn) Vill.

Habit: A variable erect to procumbent herb. Flowers in axillary or terminal cymes. Seeds brown, strongly tubercled.

Fl. & Frt. July Aug.

Distribution: Common in temperate zone at Ponwali, Gangotri and Kedar Nath, extending from 3000 to 3800 m. altitude.

Medicinal use: A plaster of the whole plant is applied on swellings and bone fractures.

Note: Following species are also found in Garhwal Himalayas through the valleys between 2100M. to 3,800M.

1. **Stellaria paniculata** Edgew., Herb, white flowers.
2. **S.semivestita** Edgew., Herb with white flowers.
3. **S.latifolia** Benth.Trailing herb, white flowers.
4. **S.decumbens** Edgew.Tufted herb white flower.

Polycarpaea corymbosa Lam.

Habit: An erect pubescent herb. Flowers crowded in silvery cymes.

Fl. & Frt. July - Sept.

Distribution: Common in the tropical zone throughout the valleys upto 2400 m. elevation.

Medicinal use: The whole plant is reported to be used both internally and externally as a remedy for bites of venomous reptiles, but, it seems to be erroneous. The leaves are used as poultice for inflammatory swellings.

Silene cucubalus Wibel.
(**S. inflata Smith**)

Habit: A large herb, flowers purple.

Fl. Sept. Oct. *Frt.* Oct.

Distribution: Sporadic in Subalpine and alpine zones at Kedar Nath, Khiranuvalley, Ponwali 2,400 M. to 3,600 M.

Medicinal use: The whole plant is considered emollient and used in bath or as a fumigant juice used in ophthalmia.

Note: The following species are found in throughout the valleys 1,800 M. to 3,300 M altitude.

INTERESTING ORCHIDS OF GARHWAL HIMALAYAS

1. **Silence Conoidea Linn.** Small herb.
2. **S. gallica Linn** - Small herb with purpil flowers.
3. **S. thomsonii** majumdar Perennial herb.
   (**Lychnis nutans** Wall ex Benth).

Lychnis fimbriata Wall ex Benth (**Lychnis indica** Benth)
Habit: A tall pubescent herb, flowers purple - white, capsule ovoid.
Fl. Aug. *Frt.* Aug. Sept.
Distribution: Sporadic found intemperate regions of Garhwal Himalayas on slopes from 1,500 M. to 3,000 M.
Local use: Locally decoction of this plant is used for lungs and liver diseases.
Note: Following species also found in this region upto 3,600 M.

1. **Lychis pilosa** Edgew - Hairy herb.
2. **L. mutans** Benth - Herb with green purple flowers.

Saponaria Vaccaria Linn.
Vernacular Name: Tomadiya.
Habit: A tall robust glabrous annual herb. Flowers rosy, fruit with 5 broad green - nerves, seeds globose.
Fl. March - April. *Frt.* April onwards.
Distribution: A common weed growing in cultivation fields throughout the valleys upto 2,700 M. altitute.
Medicinal use: It has been stated to have febrifugal properties and that animal generally refuse to eat its seeds. This plant contains 8 to 15 percent saponine. It is poisonous for rabbits.

PHYTOLACCACEAE

Phytolacca acinosa Roxb.
Vernacular Name: Jarugu.
Habit: An erect herb 1-1 1/2 M. high. Flowers yellowish. Fl. & Frt. May - July.
Distribution: Sporadically distributed at Bantoli, Ram Bara upto 2400 M. elevations in moist shady areas.
Medicinal use: Leaves are Narcotic, a source of Phytolaccatoxin. Oil from the roots is used in rheumatic pains.
Local use: Locally leaves are used as vegetables.

HYPERICACEAE

Hypericum hookerianum W & A
Habit: A glabrous herb, stem brown to red. Flowers yellow.
Fl. & Frt. Aug- Sept.
Distribution: Sporadic throughout the valleys upto 3000 m. altitude.

Medicinal use: Locally, the whole plant is used as a diuretic and astringent.

Hypericum patulum Thunb.
Habit: A glabrous shrub, 30 cm.-1m. high. Flowers yellow in terminal cymes.
Fl. & Frt. June-Aug.
Distribution: Sporadicaly distributed at Gangotari, Kedar Nath and Ponwali upto 3600 m.
Medicinal use: Seeds are aromatic and are used as stimulant.

ACTINIDIACEAE nom. cons.
(Ternstroemiaceae Sensu (Benth. & Hook)

Saurauja napalensis DC
A small to moderate sized tree. Flowers pink in droping panicles.
Fl. Feb - May. *Frt.* May - July.
Distribution: Sporadically distributed in the tropical zones of Garhwal valley.
Medicinal use: Bark of the plant is used as a poultice to help extraction of splinters embeded in the flesh.

TAMARICACEAE

Tamarix dioica Roxb.
Vernacular Name: Jhau.
Habit: A gregarious shrub, leaves minute, sheathing, acuminate, flowers light rose coloured, capsules oblong 2 in long.
Fl. May - July. *Frt.* Cold season.
Distribution: sporadic in river sides and near streams in Dehradun, Vikas Nagar and foot hills of the Garhwal regions.
Medicinal use: Galls and twigs are used as astringent, wood used for fuel.

MALVACEAE

Abutilon hirtum G.Don.
Vernacular Name: Bankhanghi.
Habit: An erect herb, 1 m. high. Flowers yellowish - Orange.
Fl. Frt. Aug - Oct.
Distribution: Sporadically distributed at Tehri, Ghonti, etc.upto 600 m. altitude.
Medicinal use: The whole plant is used as diuretic, demulcent, lexative and is also useful in fever.

Abutilon indicum (Linn) Sw.
S.N. Atibala.Loc. N. Kanghi.
Habit: An erect herb 1 m. high. Flowers Yellow.
Fl. & Frt. Aug.-Oct.
Parts used: Root, leaves and flowers.

Distribution: Common throughout the area upto 1500m. altitude, usually found in waste lands.
Medicinal use: The infusion of the root is a cooling medicine. The leaves are demulcent. The seeds are laxative and also given to relieve cough. It is efficacious in the treatment of Lecoderma. Decoction of the leaves are good as a mouth-wash and in cases of tender gums and is also used in gonorrhoea and inflamation of the bladder. The flowers and leaves are applied to boil and ulcers. The bark and root are good diuretics. Root infusion is also used in relieving strangury and haematura. It is also useful in leprosy.
Hibiscus cancellatus Roxb.
Vernacular Name: Kamalya.
Habit: An erect, hairy annual 60 cm. 1 1m. high. Flowers. Vernacular Name: Kamalya.
Fl. & Frt. July - Sept.
Distribution: Sporadically distributed throughout the valleys upto 1800 m. altitude.
Medicinal use: The whole plant is used in the preparation of medicine. Infusion of the root is a cooling agent.
Note: **Hibiscus punges** Roxb. Erect herb, Fl. yellow-purple. also found in this area.

Malva rotundifolia Linn.
Vernacular Name: Khubajee.
Habit: A pubescent, spreading herb. Leaves suborbicular. Flowers pale liliac.
Fl. & Frt. - June - Oct.
Distribution: Sporadic in temperate zones at Harsil, Bhinro ghati on moist slopes upto 2800 m. height.
Medicinal use: The leaves of the plant are given externally in scurvy, piles and skin diseases. Decoction of the leaves is used for fomentation and in sore throat. The seeds are useful in bronchitis, cough, inflammation of bladder and also applied externally in skin diseases.

Malva verticillata Linn.
Habit: An erect, hairy herb 30 cm. - 1 1/2 high. Leaves 6-lobed, cordate, flowers pale pink.
Fl. & Frt. Aug - onwards.
Distribution: It is found growing sporadically in temperate zone at Gangotri, Herkee Dun and Tunga Nath upto 3600 m. height.
Medicinal use: The whole plant is used in medicine. The leaves and stems are considered digestive, given to women in advanced stages of pregnancy.
Note: **Malva neglecta** wall. This species are found in this region.

Sida cordifolia Linn
S.N. Bala, *Vernacular Name:* Kharinta
Habit: Erect branched annual or perannial herb. Leaves ovate oblong to cordate, flowers yellowish - white.
Fl. July - Aug. *Frt.* Aug. - Sept.
Part used: Root, seed and whole plant.
Distribution: Sporadic, found in fields roadsides and throughout the lower valleys in Garhwal upto 1500 M. altitude.
Local use: Locally the whole plant decoction used as vaathar and diuretic.
Medicinal use: Abhrodisiace, febrifuge used in neurological diseases. It is believed to remove the

poisons of autointoxication such as those caused in rheumatism or fevers. The decoction is given as an anupana for other medicines such as piles and is expected to relieve pains in the body and also wind in the bowels.

Note: The following species are found in the foot hills of Garhwal regions upto 1,500 M. altitude:

1. **Sida acuta** Burm. f. Erect perennial herb Fl. - yellow.
2. **Sida cordata** (Burm. f.) (**S. vesonicitolio** Lamk, Borss) Prostrate ordecumbent herb, flowers, yellow capsule sub globose. The juice of the plant is used in spermatorrhoea, and seeds used as an aphodisias.
3. **Sida rhombifolia** Borss. Erect much branched hairy herb. Flowers - yellow.

Urena lobata Linn. sub sp. **U. lobata** Borss.
Vernacular Name: Bala-bhed.
Habit: Erect pubescent perennial herb, flowers pinkish or reddish-purple.
Fl. & Frt. May-Dec.
Distribution: Common in roadsides in Garhwal region upto 1,200M.
Medicinal use: Root diuretic, used as an external remedy for rheumatism, seeds are useful in Gonorrhoea.

BOMBACACEAE

Salmalia malabarica (DC) Schott. & Endl.
Vernacular Name: Salamali.
Habit: A large deciduous tree. Flowers fleshy, orange red. Seeds obovate smooth.
Fl. & Frt. Jan - March.
Distribution: Common throughout the valleys upto 1500m. elevation.
Medicinal use: Chief ingredient of the 'semul-musle', a medicine which is aphrodisiac, and is given in impotency. Root and bark are emetic and gum is used as a aphrodisiac, demulcent, hemostatic tonic. Flower buds are eaten as vegetable and are good tonic. Gum from the plant is astringent, aphrodisiac and also useful in diarrhoea and dysentery,

STERCULIACEAE

Helicteres isora Linn.
S.N. Avartakee, *Vernacular Name:* Marorphali.
Habit: A shrub with spreading branches and grey bark, fruit cylindrical and pubscent.
Fl. & Frt. Sept-Oct.
Distribution: Common on hill slopes upto 1200 m. altitude.
Medicinal use: The fruits are given in stomach pains. Bark is useful in dysentery, diarrhoea. Juice of the root is useful in diabates and in abdominal infections. The stem fiber is used for making ropes and cordage.

Pterospermum acerifolium Willd.
S.N. Muchookanda, *Vernacular Name:* Kanaka-Champa.
Habit: A large tree with thin, grey, bark. Flowers axillary, yellowish, fragrant.
Fl. April - May *Frt.* Winter.
Distribution: Sporadic on the foot hill of Garhwal regions upto 900 m. elevation.
Medicinal use: The leaves are useful as tinder and stops bleeding from the wounds. Plaster made out of the calyx is useful in glandular swellings in the neck and ears. Flowers are used as general tonic. The bark is applied in suppuratiry small-pox.

Sterculia villosa Roxb.
Vernacular Name: God-gudala, Katira.
Habit: A decidous tree, with grey bark. Flowers yellow in much-branched. Fruit follicular, seed-black.
Fl. March-April *Frt.* June, July.
Distribution: Sporadic in sandy soil in the Garhwal region upto 1000 M.

Medicinal use: White clear gum exudes obtained from cuts made in the bark is used medicinally and sold in Dehradun market in the name of Katira-gum.

TILIACEAE

Corchorus aestuans Linn.
Habit: An erect or sub-erect annual herb with pale-yellow flowers, Capsule - serrate.
Fl & Frt. July - Oct.
Distribution: Common in hotter parts of the area in the sandy grassy localities of river beds and roadside.
Medicinal use: The whole plant is used as a demulcent. Seeds are stomachic, and are also useful in pneumonia.

Corchorus capsularis Linn.
S.N. Chanchu, *Vernacular Name:* Chiench.
Habit: An erect glabrous herb, 60 cm. to 1 m. high. Flowers pinkish-red.
Fl. & Frt. July - Aug.
Distribution: Common in the hotter parts of the valleys.
Medicinal use: The whole plant is used as a medicinal charcoal. Infusion of the leaves is used as a demulcent, carminative and as bitter tonic.

Triumfetta rhomboides Jacq.
S.N. Jhinjhrita,
Habit: An erect herb (to under shrub) 30 cm. - 1 m. high. Flowers yellow 6 mm. long.
Distribution: Common throughout the valleys upto 1800 m. elevation in the Garhwal Himalayas.

Medicinal use: Leaves, flowers and fruits are mucilagenous and astringent. Root is diuretic and its hot infusion is given to pregnant ladies in facilitating delivery, when it is delayed. Bark and fresh leaves are useful in dysentery and diarrhoea.

Grewia asitica Linn.
(= Grewia elastica Royle, var. elastica Wall.)
Vernacular Name: Dhaman, Phalasa
Habit: A tree with grey bark. Leaves ovate, rounded-cordate. Flowers yellow, densely crowded.
Fl. & Frt. April - Aug.
Distribution: Common in Sal and mixed forests of the outer Garhwal Himalayas upto 100M.
Medicinal use: Bark and fruits are used medicinally. Fruits are eaten, leaves are used as fodder by animal. The bark yields strong white fiber. The wood is used for golf shafts.

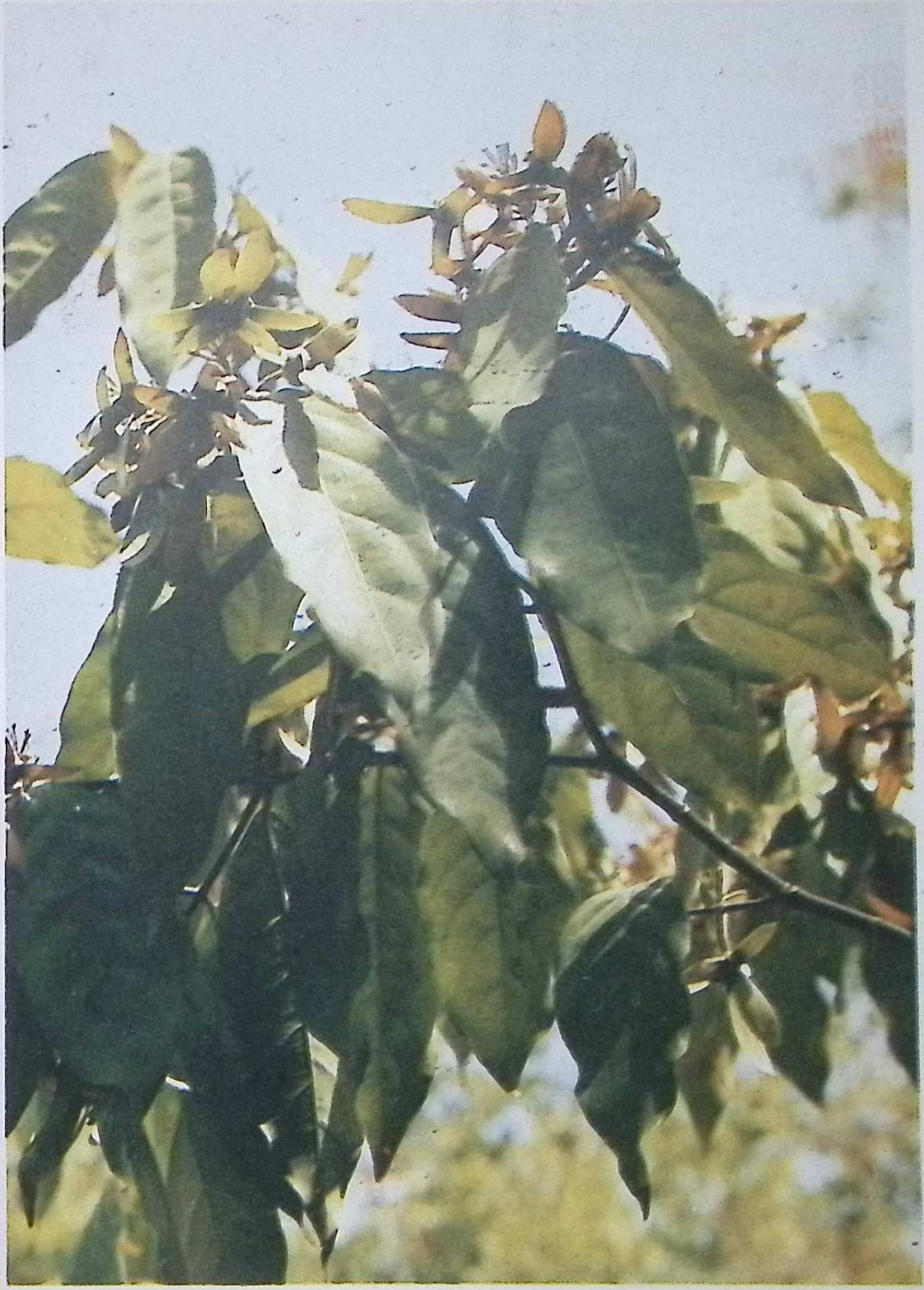
Grewia sclerophylla Roxb.
Vernacular Name: Gurhheli.
Habit: A small shrub, 1 $^1/_2$ - 2 m. high, leaves ovate, acuminate. Flowers pale-yellow.
Fl. & Frt. Aug. - Oct.
Distribution: It is found sporadic in Sub Himalayan tract in Tehri Garhwal upto 1200 m.
Medicinal use: Fruit edible but not very tasty. The stem yields a strong white fiber which can be made into ropes.
Note: The following species are also found in outer part of the Garhwal Himalayas upto 1,800 M. altitude.

Grewia optive Drum ex.Berret. (= **Grewia oppositifolia** Roxb) L.N. Bhimal.
A moderate tree, the inner bark yields a fiber which is used for rope and paper making and the leaves are much valued for bodder. The ripe fruits are eaten. The tree plays an important role in the daily life of the inhabitants. Locally the bark is used as a detergent for cleaning hair of ladies.

LINACEAE

Reinwardtia indica Dum. (=Reinwardtia trigyna Planch)
Vernacular Name: Bosanti.
Habit: A glabrous shrub 60 - 100 cm. high, erect or ascending. Leaves entire, lanceolate. Flowers yellow.
Fl. & Frt. Dec. - June.
Distribution: Common in tropical zone throughout valleys upto 1800 m. altitude.
Local use: Leaves are used as ornamental flowers which are considered as poisonous.

Linum ustitatissimum Desf.
S.N. Atasi. *Vernacular Name:* Alsi.
Habit: Erect branched annual herb, leaves linear. Flowers terminal, blue.
Fl. April-May. *Part used* : Seed, whole plant.
Distribution: Cultivated in agricultural fields in outer part of Garhwal region.
Medicinal use: Aphrodisiac, carminative, diuretic. It is useful in genito-urinary diseases, gout inflamation and rheumatism. It is also used as poultice to reduce pain and inflammation. The seeds contain a cyanogenetic glucoside. In this plant a poisonous property has also been reported.



Hiptage benahalensis Kurz (Madhabilata) Page No. 23

MALPIGHIACEAE

Hiptage benghalensis (Linn.) Kurz.
Vernacular Name: Madhabilata.
Habit: An extensive evergreen climbing shrub. Flowers large, showy in racemos forming panicle, fragrant and yellow.
Fl. & Frt. March-June.
Distribution: Common in ravines and moist places or the tropical zones at Ghonti, Tehri, Kalsi, North garhwal upto 1500m. altitude. **Michelia champaca** Linn also found in this region.
Medicinal use: The leaves are useful in rheumatism, skin diseases and asthma. Roots contain 'Hipatagin', locally the juice of the leaves is used as an insecticide.

GERANIACEAE

Geranium wallichianum D. Don
Vernacular Name: Lal Jari.
Habit: A perennial, hairy herb, + 30 cm. - 1.$^1/_2$ m. high., Flowers blue-purple.
Fl. July- onwards.
Distribution: Often found in temperate zones at Bhagirathi valley, Bhatwari, Harsil, Kedar Nath, Ponwali, from 2400m. to 3600 m. elevation.
Medicinal use: Locally the roots are applied on cuts and bruises, and are commonly carried by the shepherds for this purpose.

Geranium nepalense Sweet
Habit: A pubescent slender herb 15-25 cm. high, rooting at the nodes. Flowers pale-purple.
Fl. May-Sept.
Distribution: Common in subalpine zones at Ghuttu, Kantal, Kalsi Bhilagana valley upto 2700m. elevation.
Medicinal use: The whole plant is used in renal diseases. It is diuretic and astringent.

Geranium ocellatum Cambess
Habit: A prostrate or diffuse annual herb. Flowers pink to dark purple.
Fl. & Frt. July-Oct.
Distribution: Common in moist places in Garhhwal ranges of the Himalaya upto 2000 m. altitude.
Medicinal use: The plant is useful as an astringent and diuretic.

BALSAMINACEAE (nom. Fam. Cons.)
(Geraniaceae)

Impatiens balsamina Linn.
Vernacular Name: Gulmehndi.
Habit: An erect herb 15-40 cm. high. Leaves sessile, flowers pink or white.
Fl. & Frt. July-Aug.

Distribution: The plant is growing throughout the valleys upto 1800 m. altitude.
Medicinal uses: Flowers are used as cooling agent and tonic, also useful when applied over burns and scalds.
Note: Following species are found in Garhwal Himalayas upto 3,600 M.

1. **Impatiens thomsoni Hook f.**
2. **I.racemosa DC.**
3. **I.laxiflora Edgew.**

OXALIDACEAE (nom.fam.Cons.) Garaniaceae)

Oxalis acetosella Linn.
S.N. Changeri, *Vernacular Name:* Amloni.
Habit: A perennial stemless herb. Root rhizomatic creeping, Flowers pink-purplish or whitish.
Fl. & Frt. - April onwards.
Distribution: Frequent in tropical zones growing in damp shady areas upto 2500 m.
Medicinal use: The herb in water forms a drink to relieve fever. Leaves are taken as salad.

Oxalis corniculáta Linn.
S.N. Changiri, *Vernacular Name:* Amili.
Habit: An annual or perennial hairy herb. Flowers pale-pink small on long stalked inflorescence.
Fl. & Frt. April-Nov.
Distribution: This plant is found throughout the valleys in damp or moist places upto 1800m. height.
Medicinal use: The whole plant is used as a cure for scurvy. Leaves and roots are useful in diarrhoea and dysentery.Externally the plant is used to remove warts and opacity of cornea, when taken internally, it is a good appetiser.

RUTACEAE

Aegle marmelos Corr.
S.N. Bilva, *Vernacular Name:* Bel.
Habit: Smalll to moderate sized deciduous tree. Flowers greenish-white and fragrant. Fruit aromatic grey to yellow; pulp orange coloured, sweet.
Fl. April *Frt.* June.
Distribution: Common throughout the lower valleys upto 1800m altitude in Garhwal.
Part used: Bark, leaves, root, fruit.
Medicinal use: This plant is used as an aromatic, cooling, laxative, astringent and stomachic agent. The fruit is useful in diarrhoea and dysentery. Slices of the fruits are sold in the market. A delicious syrup, prepared from the fruit taken in stomach troubles etc. The flowers, leaves, fruits, pulp and the fresh wood are all aromatic. The pulp of the ripe fruit is used in the preparation of a tasteful aromatic sharbat which is a popular drink in India in hot weather.
Note: Fairly good quantity can be collected for trade.

Citrus medica Linn.
S.N. Nimbuka, *Vernacular Name:* Nimbu.
Habit: A shrub or small tree; flowers pinkish white; fruit ovoid, oblong and thorny yellow.
Fl. & Frt. Aug.-March.
Distribution: Commonly cultivated in the lower valleys of the area upto 1200m.
Medicinal use: The root is useful in vomiting and urinary calculus. Ripe fruits used as stimulant and tonic. Fruit commonly used as a refrigent pickles and preserver.

Murraya Koenigii (Linn.) Spreng.
S.N. Keidlarya, *Vernacular Name:* Ganuhilu.
Habit: A deciduous shrub or a small tree, with thin dark-brown bark. Leaves aromatic. Flowers white, fruit sub-globose, black when ripe.
Fl. & Frt. March-July.
Distribution: Common in tropical zones throughout the valleys upto 1500 m. elevation.
Medicinal use: The bark is used as stimulant and externally used to cure eruptions and bites of poisonous insects and reptiles. The leaves are reported to yield 0.04 percent, of a bright yellow essential oil. The fresh leaves gives a flavour to curries and are much used for this purpose. It is known as currypata.

Murraya paniculata (Linn) Jack.
Vernacular Name: Marchula.
Habit: An evergreen shrub or a small tree, flowers very fragerant, white.
Fl. & Frt. May-June.
Distribution: Common in outer hills of the valleys upto 1500m. in shady ravines and slopes.
Medicinal use: The leaves, root and bark are used in Indian Medicines as a stimulant, referigerant, stomachic, tonic, and also as an astringent. The leaves are also sometimes used against rheumatism, cough and hysteria. The fresh leaves yield 0.01 percent of oil.

Glycosmis pentephylla Correa
Vernacular Name: Ban-Nimbu.
Habit: A small evergreen shrub or a small tree. Flowers white fragrant; fruit a globose berry, pink or bluish-white when ripe with an aromatic sweetish pulp.
Fl. & Frts. Sept.-Oct.
Distribution: Sporadically distributed in the area. It has been found growing at Kalsia at about 1500 m. altitude.
Medicinal use: The ripe fruits are eaten. Locally, the roots are used in fever. It is also useful in snake-bite.

Skimmia laureola Sieb. & zucc. ex.Walp.
Vernacular Name: Kedarpaiti.
Habit: An aromatic evergreen shrub. Flowers orange to yellow; fruits red when ripe.
Fl. April-May. *Frt.* Oct.
Distribution: The plant occurs commonly in the temperate zone throughout the valleys upto 3000 m. altitude, in moist shady areas.
Medicinal use: The leaves are used as an incense. Locally, the whole plant is said to be poisonous

to goats. The odour of the musk-deer (kasturi) is popularly supposed to be derived from it. The shade dried leaves yield 0.5 percent of an essential oil.

Toddalia asiatica Lam.
Vernacular Name: Kanchan.
Habit: A large, prickly shrub. Leaves alternate, usually 3-foliate. Flowers yellow. Seeds reniform.
Fl. & Frt. April-July.
Distribution: Sporadic in swampy areas or in deep open ravines at Chanasali, Ghonti upto 900 m. elevation.
Medicinal use: Locally, the bark of the roots is used as an aromatic bitter tonic. It is also used in fevers. The plant contains a bitter principle, a colouring matter, starch, pectin, and Citric acid. The root bark contains the alkaloids 'Toddaline', and 'Toddalinine.

Zanthoxylum alatum Roxb.
S.N. Tumbru, *Vernacular Name:* Timbaru.
Habit: A prickly, pungent aromatic shrub with dense foliage. Flowers yellow; fruits pungent, aromatic, red when ripe.
Fl. April-June. *Frt.* June-oct.
Distribution: Common in the hotter parts of the valleys of the sub-tropical zone, distributed at Kanatal, Tehri, Bhagirathi and Yamuna valleys upto 21m. elevation.
Part used: Fruit, Bark.
Medicinal use: The seeds and bark are used for poisoning fishes and have insecticidal properties. The fruits yield 3.7 percent of a lemon-yellow oil and on prolonged distillation yields 0.9 percent of a crystalline substance. Seeds, aromatic, carminative. It is useful in gastro-intenstinal diseases.
Note: Small quantities can be collected for trade.

SIMARUBACEAE

Picrasma quassioides Bennett
Vernacular Name: Karui
Habit : A large shrub, bark bitter. Flowers polygamous pale-green; fruit a drupe black when ripe.
Fl. April-June.
Distribution : Sporadic in sub-tropical zones distributed at Jaunsar, Tehri Garhwal and Mundali, often in shady ravines, upto 1800 m. elevation.
Medicinal use: Wood is a bitter substitute for 'quassia. The bark is used as a tonic in Indian System of Medicine.

MELIACEAE

Toona serrata (Royle) M. Roem
(Cedrela toona Roxb).
Vernacular Name: Tuna

Habit: A moderate sized to large tree. Flowers fostid, pinkish in large panicles.
Fl. May-June. *Frt.* Oct.
Distribution: It is common in ravines on rocky soil upto 1200m. altitude throughout the Garhwal region.
Medicinal use: The bark has astringent properties and is used in the preparation of medicines.
Note: Mahanimba (**Melia azedarch** Linn.) and nimba (**Azadirachta indica** A.Juss) cultivated in Dehradun and found at outer part of Garhwal region.

CELASTRACEAE

Celastrus paniculatus Willd.
S.N. Jyotishmati. *Vernacular Name:* Malkakni,
Habit : A large, woody climber with corky bark. Flowers pale-green, fruit bright yellow when ripe.
Fl. April-June. *Frt.* June-Aug.
Distribution: Common in the tropical zones of the area upto 1500 m. altitude.
Medicinal use: The leaves and seeds are used in the preparation of country medicines. An oil is extracted from the seeds which is believed to have great medicinal value and is also used for lighting purposes. The seed-oil is useful in rheumatism, and leprosy. Seeds brain-tonic, emactic laxative and stimulant. It is also useful in gout, nervine and neurological diseases.

Euonymus tingens Wall.
S.N. Bhilotaka.*Vernacular Name:* Kunkuma.
Habit: A small tree with ash colour, corky bark, bright yellow inside. Flowers brown or purple.
Fl. April-June. *Frt.* Nov-Dec.
Distribution: Sporadically distributed in sub alpine zones 2,100m. to 2,800m. altitude at Bhilangana valley, Bhagirathi valley and Yamuna valley.
Medicinal use: Locally the bark of the plant is applied on the forehead and is useful for eye diseases. The outer corky bark of old stems gives a yellow dye.
Note: Dalhala has described it is a tree found in the Kedar mountains of the Himalaya region and locally called Bhambeli, Kumku. It was identified as Bhillotaka, locally used in eye diseases.

Euonymus hamiltonianus Wall
Habit: Small tree with whitish flowers.
Fl. & Frt. Aug.-Sept.
Distribution: Rare, found at Duphand, in Bhilangana valleys at an altitude of 1,800 m. to 2,800 m.
Medicinal use : Locally the bark of the plant is used for eye diseases.

Euonymus pendulus Wall. var. **Japonicus** Wall.
Habit: Small shrub with yellowish flowers.
Fl. & Frt. July-Aug.
Distribution: Sporadically distributed in temperate zones at Bhagirathi valley, Chakrota, Kedar Nath, Tunga Nath, Kanatal at 2100 to 3000 m. elevation.
Medicinal use: The plant is gastro-intestinal stimulant and increases the flow of bile and other

secretions. It is used as hepatic stimulant, purgative and emetic.

Cassine glauca (Rottb.) O. Kuntze
(**Elaeodendron glaucum** Pers.)
S.N. Mokshaka *Vernacular Name:* Jangle.
Habit: A medium sized to large tree, bark dark-grey and blood-red in side. Flowers whitish; drupe obovoid.
Fl. Sept- June. *Frt.* Jan.
Distribution: Sporadic in outer Hills of the area, extending upto 1500 m. elevation.
Medicinal use: The root-bark is applied to swellings and used as an emetic agent. It is highly poisonous, if taken internally. The bark contains 8 percent of tannins. Powdered leaves are used as fumigatory to rose hysterical women.

RHAMNACEAE

Rhamnus purpures Edgew.
Vernacular Name: Juhish.
Habit: An unarmed, deciduous shrub; leaves alternate. Flowers in axillary cymes.
Fl. & Frt. April-June.
Distribution: Common at Deoban, Mundali, Ponwali and in northern Garhwal extending from 1500 to 2700 m. altitude.
Local use: Locally the fruits are used as a purgative.

Rhamnus triqueter Wall.
Vernacular Name: Gaunt.
Habit: A deciduous, pubescent shrub; leaves ovate-oblong. Flowers greenish, in dense axillary fascicled racemes.
Fl. March. *Frt.* April-June.
Distribution: Common in the Tons valley, and outer hills of Garhwal upto 1500 m. altitude.

Rhamnus virgatas Roxb.
Vernacular Name: Thanthara
Habit: A deciduous shrub or small tree. Flowers small yellowish.
Fl. March-May. *Frt.* June-Oct.
Distribution: It is growing commonly throughout the valleys of the Garhwal extending upto 1500 m. altitude.
Medicinal use: The bark and fruits have toxic, bitter, astringent, diaphoretic, diuretic, emollient properties.
Note: Fruits and bark are valued for dyes and pigments obtained from them.

Ventilago Calyculata Tulasne
S.N. Kaivartaka, *Vernacular Name:* Lal-beli.
Habit: A large woody climber, bark dark-grey, leaves-oblong-elliptic, flowers numerous, small greenish.

Fl. Feb.-March. *Frt.* May, June.
Distribution: Found in lower valleys upto 1200m.
Medicinal use: The root bark of the plant produces a valuable dye, which is used for dyeing cotton fabrics.

Zizyphus juguba Lam.
S.N. Badari, *Vernacular Name:* Beri, Ber
Habit: A moderate-sized tree, bark-dark grey, leaves very variable, flowers, greenish yellow.
Fl. Sept. Nov. *Frt.* Dec. Feb.
Distribution: Found commonly in outer part of the lower valleys of Garhwal region upto 1000m.
Medicinal use: The fruits are edible. The bark is used for fanning and the leaves are given as fodder.
Note: Following species are also found in lower valleys of Garhwal regions upto 1,00 M.:

1. **Zizyphus xylopyra Willd. Kath Ber**
   S.N. Ghontaphala.
   A large erect shrub.
2. **Zizyphus oxyphylla Edgew - Beri**
   A thorny shrub. Flowers pale.

VITACEAE (Ampelideae HBK)

Vitis lanata Roxb
Vernacular Name: Kashand .
Habit: A large woody climber, flowers yellowish-green in large panicles.
Fl. April, June. *Frt.* - June, July.
Distribution: Common in throughout the valleys of Garhwal regions upto 2,100 m. elevation.
Medicinal use: Locally the roots are used as carminative. The fruits are eaten when ripe.

Parthenocissus semicordiata (Wall) Planch.
(Vitis Semicordata Wall)
Vernacular Name: Panlu-ki bil.
Habit: A large woody climber, flowers yellowish-green. fruit - black when ripe.
Fl. - April-May. *Frt.* Aug. Sept.
Local use: Wood used for picture frames.

Ampelocissus latifolia Planch.
(Vitis latifolia Roxb. *Ver.*- Panibel)
Habit: A large climber, flowers reddish-brown.
Fl. May-July, *Frt.* Oct.-Nov.
Distribution: Common in lower valleys in Sal forest upto 1000m.
Local use: Locally the roots are used for washing of wounds.

Leea edgeworthii Santap.
(**Leea aspra** Edgew)
Habit: Erect perennial herbs, flowers whitish green.
Fl. & Frt. June, Aug.
Distribution: Found, common on ravines and sal forest in Garhwal regions upto 1,200 m.
Local use: Locally ripe fruits are edible.

SAPINDACEAE

Cardiospermum halicacabum Linn.
S.N. Kakadni, *Vernacular Name:* Kanphote.
Habit: Annual perennial climbing hairy herb, leaves 3-foliolate, flowers white axillary, seeds glabrous smooth.
Fl. & Frt. Nov.-Jan.
Distribution: Common in scrub jungles and hedges throughout the Garhwal regions upto 1,200 m. elevation.
Medicinal use: The root is used emetic, laxative, and stomachic, this plant is said to contain saponin.
Note: Dalhana has identified as Kakadami or kakamardamika, roots are poisonous according to Susruta.

HIPPOCASTANACEAE (Sapindaceae BH)

Aesculus indica Colebr.
Vernacular Name: Pangara
Habit: A large tree, flowers white, horizontal, seed-dark, brown, smooth, shining.
Fl. April-June. *Frt.* July-oct.
Distribution: Common in moist, shady ravines throughout in valleys in Garhwal regions at 1,000 m. to 3,000 m. elevation.
Local use: The fruit is given to cattle and goats and the embryo is eaten by the hill people after grounding and mixing with flour.

Sapindus mukrossi Gaertn.
S.N. Arishta, *Vernacular Name:* Ritha.
Habit: A handsome tree, leave pinnate, flowers- white or purple. Fruit - fleshy yellow or pale-brown.
Distribution: Cultivated, found in Garhwal regions throughout the lower valleys upto 1500 m. elevation.
Local use: Locally fruits are very commonly used for washing valuable fabrics, such as wool and silk.
Medicinal use: It contains fairly large amount of saponins about 10.5 percent. It is used as abortifacient and antihistaminic.

STAPHYLEACEAE (Nam. fam. Cons)
(Sapindaceae)

Staphylea emodi Wall ex Brandis
Vernacular Name: Marchhole
Habit: A small tree, bark-dark-brown, flowers white.
Fl. April-May. *Frt.* Oct.-Dec.
Distribution: It is found growing sporadic in Bhilangana Valley, Bhagirathi valley and Yamuna valley, 1,000 m. to 2,700 m.
Local use: Locally bark is used for snake-bite.

ANACARDIACEAE

Pistacia Kinjak Stacks *Var*-**integerrma**
(Pistacia integerrima Stewart ex.Brandis)
S.N. Karkatashringi, *Vernacular Name:* Kakaro.
Habit: A large tree, leaves alternate, flowers small or pubescent.
Fl. April, May. *Frt.* July onwards.
Distribution: Common in throughout the valleys of Garhwal regions upto 1500m. elevation.
Medicinal use: Galls frequently found on this tree which are locally used as expectorant and useful in asthma.

Lannea coromandelica (Houtt) Merrill. (Odina wodier Roxb)
S.N. Jinghini, *Vernacular Name:* Jhingan.
Habit: A deciduous tree.
Fl. March-April. *Frt.* June, July.
Distribution: Common in lower valleys of Garhwal regions upto 900 m. elevation.
Medicinal use: Bark is astringent and is used as a lotion for leprous ulcer. Decoction of the bark is used for toothache, gum also used in medicine.

Rhus parviflora Roxb.
Vernacular Name: Tungala.
Habit: A shrub with 3-foliolate leaves. Flowers yellowish; fruit brown when ripe.
Fl. March-April. *Frt.* Aug-Sept.
Distribution: Common in tropical zone throughout the valleys upto 1500 m. elevation.
Medicinal use: The ripe fruits are used medicinally in the name of Samakdana as a carminative.

Rhus punjabensis J.L. Stew. ex.Brandis
Vernacular Name: Askhor
Habit: A small tree. Leaves - pinnate. Flowers yellowish green or white.
Fl. April-May. *Frt.* Aug. Sept.
Distribution: It is distributed throughout Northern Garhwal ranges of the Himalayas at an altitude of 600 to 2100 m. in moist ravines.

Medicinal use: The juice of the plant is corrosive and vesicant. For this reason only it is not cut or hacked unwantedly if not required.

Rhus wallichii Hook.f.
Vernacular Name: Konki
Habit: A deciduous, small-tree, all parts rusty tomentose. leaves odd-pinnate. Flowers greenish-yellow.
Fl. June-July. *Frt.* Oct.-Nov.
Distribution: This plant is found in the temperate Himalayan ranges including the Garhwal, ranging from 1500 to 2400 m.
Medicinal use: The juice is very corrosive and possesses vesicon properties are reported.

Spondias pinnate (Linn.f.) Kurz (S.mangifera Willd)
S.N. Amrataka, *Vernacular Name:* Ambara.
Habit: A small deciduous tree. Flowers yellowish - white, fruits greenish yellow when ripe.
Fl. April. *Frt.* June-Jan.
Distribution: Common within the area, on open dry slopes upto 1500 m. altitude.
Medicinal use: The bark is used as tonic and refrigerative. Juice of the leaves is used in ear-ache. Fruits are also used as a carminative and astingent.
Note: **Buchamania Lanzan** also found in this region. Seed, Tonic.

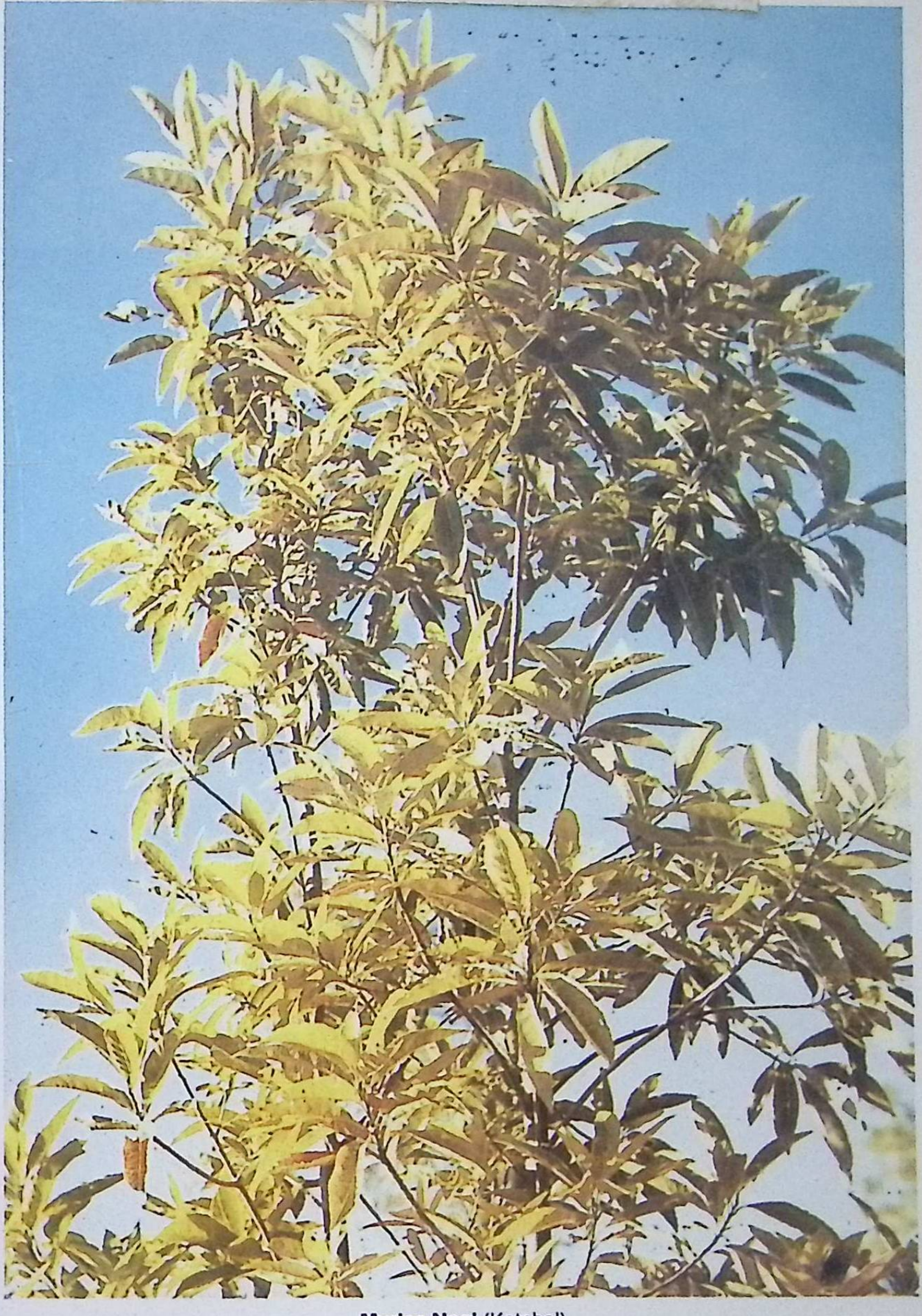
CORIARIACEAE

Coriaria nepalensis Wall.
Vernacular Name: Masuri, Gangara.
Habit: A large shrub, branches arching. Flowers greenish-yellow, fruit black-purple, composed of 5-distinct, one-seeded carpels.
Fl. April. *Frt.* April-June.
Distribution: Sporadically distributed in the Tons Valley, Kanatal, Ghuttu and Tehri areas, often found on moist slopes, upto 2400 m. elevation.
Medicinal use: The fruits are used medicinally. The seeds, sometimes produce symptoms resembling 'tetanus', leaves stated to contain about 20 percent of 'tannins'. The fruits juice is also produced a good dye.

MORINGACEAE

Moringa oleifera Lam.
S.N. Shigaru, *Vernacular Name* : Soanjana.
Habit: A decidous tree with thick corky bark,flowers greenish white.
Fl. April. *Frt.* June, July.
Distribution: Common in outer hill of Garhwal Himalaya upto 1200m. elevation.
Medicinal use: Root and bark are used in urinary diseases, intermittent fever and rheumatism.

Medicinal Plants of Garhwal Himalayas



Myrica Nagi (Katphal)

FABACEAE (nom.alt. Leguminosae vel. Papilionaceae)

Abrus precatorius Linn.
S.N. Gunja, *Vernacular Name:* Gunj.
Habit: A much branched perennial climber. Flowers reddish-white. Seeds oval, black and red.
Fl. Aug. Sept. *Frt.* Winter.
Distribution: Common throughout the valleys upto 1200 m. elevation.
Medicinal use: The plant has been used for medicinal purposes by the 'Hindus' from very early times, and is mentioned in the "Sushruta". The leaves have a sweetish taste and their juice is used as a cure for hoar senses; mixed with blend oil it is applied to painful swellings. The root is sometimes used as a substitute for liquorice (Mulethi). Although it is said to contain 'glycyrrhizin', an active principle of Liquorice, it is a poor substitute. The seeds contain the toxalbumin 'abrin'.

Astragalus leucocephalus Grah.
S.N. Rudarvantee, *Vernacular Name:* Rudarvantee.
Habit: A perennial herb, covered with silvery white hairs. Flowers pale-yellow, in ovoid heads.
Fl. & Frt. April-June.
Distribution: Sporadically distributed at Mussorie, Suoora Kholi, Nagatiba upto 1800 to 2400 m. elevation.
Medicinal use: The whole plant powder or decoction is used as expectorant and useful in rheumatism.

Astragalus candolleanus Royle
Vernacular Name: Rudarvantee.
Habit: A perennial documbent shrub with silvery white hairs, flowers yellow.
Fl. & Frt. July-Sept.
Distribution: Sporadically distributed at Gangotri, Tapoban, Nilla Valley and Badri Nath, extending from 3600m to 4000m. elevation on moist slopes.
Medicinal use: The root powder or decoction is used internally in tuberculosis, skin diseases, cough and also for purifying food. The drug is recommended for clinical and Pharmacological screening. There is a specific demand for it among the 'sadhus' for its curative properties in tuberculosis conditions.

Astragalus himalayanus Klotz.
Habit: A creeping herb with violet flowers.
Distribution: Sporadic in vasudhara (Alakananda valley) at 3500 m. elevation.
Medicinal use: Locally the roots are used as a expectorant.

Astragalus strictus Grah.
Habit: A prostrate herb on rocks. Flowers bluish.
Fl. & Frt. July-Sept.
Distribution: Sporadic in alpine zone of Rishi Ganga valley at 3600 m. elevation.
Medicinal use: The whole plant's decoction is used in skin and cough diseases.

Atylosia scarabaeoides Benth
S.N. Mudaga-parni,
Habit: A densely pubescent or tomentose twinging climber. Flowers yellow; pods greyish pubescent.
Fl. & Frt. Most of year.
Distribution: Frequent in the lower valleys upto 1500 m. elevation in Garhwal regions.
Medicinal use: The whole plant is used as digestive, diuretic and febrifuge.

Atylosia mollis Benth.
Habit: A pubescent twinenr flower yellow, pod grey, hairy.
Fl. & Frt. Sept.-Dec.
Distribution: Common on grassy slopes throughout the valleys of Garhwal extending upto 1800 m. elevation.
Local use: Locally the whole plant is used as a tonic and diuretic.

Crotalaria albida Heyne ex.Roth
Vernacular Name: Khurmana
Habit: An erect herb, 60-100 cm. high. Flowers yellow; pods glabrous, 1.2 cm. long.
Fl. - July-Sept.
Distribution: Common on the slopes of the valleys upto 1500 m. height, throughout the year.
Medicinal use: Infusion of the whole plant is used as gargle for sore throat and inflammation.

Crotalaria sessiliflora Linn.
Habit: An erect herb; flowers pale - blue.
Fl. Aug.-Sept. *Frt.* Oct.-Dec.
Distribution: Sporadically distributed along Mandakini valley at about 2600 m. elevation and also in tropical zone on the moist slopes of Ram bara at 1800 m. elevation.
Medicinal use: The whole plant is used in medicine as anti-spasmodic and ecbolics.

Desmodium gangeticum DC.
S.N. Shalparni,
Habit: An erect or sub-erect under shrub, 30-120 cm. high, flowers purple, terminal.
Fl. & Frt.
Distribution: Common throughout the lower hills upto 1200 m. altitude.
Medicinal use: The whole plant is considered in Dashmoolgana and useful in fever, cough and asthma.

Desmodium latifolium DC.
(= **Desmodium lasiocarpum** DC)
Habit: An erect under shrub, 1-2 m. high. Flowers bright purple.
Fl. & Frt. Aug.-Dec.
Distribution: Common in the Garhwal area (Ghansoli) upto 1200 m. height.
Medicinal use: Anti-inflammatory, anti-syphilitic: expectorants.Useful in nervous disorders.

Desmodium laxliflorum DC.
Habit: An erect under shrub 30-100 cm. high. Leaves 3-foliolat hairy. Flowers blue, dropping, axillary.
Fl. July-Sept.. *Frt.* Oct.-Nov.
Distribution: Common in the outer hills upto 1500 m. elevation.
Medicinal use: The whole plant is used as a tonic,diuretic, astringent and is useful in fever, cough and asthma.

Dolichos uniflorus Lamk. (Dolichos biflorus Linn. Auct. proparte non Linn)
S.N: Kulattha, *Vernacular Name:* Kulatha.
Habit: A spreading hairy twiner. Flower yellowish.
Distribution: Cultivated on the lower hills of Garhwal upto 1200 m.
Medicinal use: The seeds are locally used as curry for dissolving the stone of the kidney and the whole herb is given to animals as fodder. Decoction is used in menstrual disorders.

Erythrina suberosa Roxb.
Vernacular Name: Madar, Paribhadara.
Habit: A small tree, leaves 3-foliolate. Flowers orange red, pod stipitate.
Fl. March.
Distribution: Common at Tons and Jamuna and Tehri Garhwal upto 1500 m. height.
Medicinal use: The bark is medicinally used. Locally, the leaves are used in the infections of Round-worms.

Flemingia bracteata Wight
Habit: An erect, velvety undershrub, branches terete. Leaves simple. Rachhis of raceme zig-zag. Flowers purple.
Fl. Oct.-Jan. *Frt.* Nov.-Feb.
Distribution: It is found sporadic in outer hills of Garhwal region upto 1500 m.
Medicinal use: Decoction of the root is used in laemorrhage. It is sold in the market in the name of Shalparni.

Moghania vestita (Erah) O. Kuntze (Fleminjia vestita Benth.)
Habit: A pubsescent trailing herb, roots tuberous. Flowers reddish. Pods 1-seeded.
Fl. August.
Distribution: Common in temporate belts above 2000 m. altitude.
Medicinal use: Used as anti-spasmodics and diuretics. It is also sold in the market in the name of Shalparni.

Mucuna prurita Hook
S.N. Atmagupta, *Vernacular Name:* Kuonch.
Habit: A slender twining climber. Leaves silky, pubescent. Flowers purplish-blue.
Fl. Sept.-Dec. *Frts.* Oct.-Jan.
Distribution: Sporadically distributed in the valleys throughout the area upto 1500 m. altitude.
Medicinal use: The seeds are used as an aphrodisic and nervine tonic. Roots are used for delirium in fever.

Mucuna nigricans (Lour) Steud. (Mucuna imbricata DC.)
Vernacular Name: Bhaislagalo
Habit: A large woody climber. Flowers dull-purple. Pod oblong, 4-6' in long.
Fl. - Aug.-Sept.
Distribution: Common, throughout the valleys Upto 1500 m.
Local use: The seeds are used as ecobolics.

Ougeinia dalbergioides Benth.
S.N. Tinisa, *Vernacular Name:* Sandan.
Habit: A small to medium sized tree. Flowers copious-white or pink.
Fl. March-April.
Distribution: It is found growing in the Sub-Himalayan tracts and outer Himalayan valleys on slopes upto an altitude of 1500 m. In the Garhwal area it is distributed from Chamba to Ghuttu and Bhagirathi-Valley.
Medicinal use: The bark is used in the treatment of dysentery and diarrhoea. It is also used as fish poison.

Phaseolus trilobus Ait.
Vernacular Name: Mungwan, S.N. Mudagaparni.
Habit: A trailing or twining herb, 308 cm. high. Flowers pale-yellow; Pod glabrous.
Fl. April. Oct.
Distribution: Sporadic in throughout the valleys upto 1200 m.
Medicinal use: The whole plant is used as tonic, Diaphoretics, and aphrodisic.

Phaseolus Calcaratus Roxb.
Habit: A tailing or twining under shrub. Flowers yellow 1.2 cm. long.
Fl. Aug.-Oct.
Distribution: Common throughout the valleys often growing on moist slopes upto 1800 m. elevation.
Medicinal use: The whole plant is used as **Phaselous trilobus.**

Pueraria tuberosa DC.
S.N. Bidarikanda, *Vernacular Name:* Saral.
Habit: A twining woody climber with large tuberous roots.
Leaves 3-Foliolate. Flowers bright blue, pod 5-7 cm. long, flat.
Fl. March-April.
Distribution: Common throughout the valleys of the area upto 1500 m. altitude.
Medicinal use: The roots are used as a tonic, aphrodisic and lactagogue.

Tephrosia purpurea Pers.
S.N. Sharpunkha.
Habit: A branched perennial herb or under shrub. Flowers red or purple, pod, pubescent.
Fl. July-Sept.
Distribution: Common on grassy slopes, throughout the valleys upto 1500 m. elevation.
Medicinal use: The whole plant is used as a bitter tonic. It is also useful in tympanitis and as a

blood purifier. Analgesic activity of various extracts of the plant was reported.

Teramnus labialis (Linn.f.) Spreng.
S.N. Mashaparni.
Habit: A spreading climbing herb. Flowers yellow. It is growing sporadic in tropical zone of the Garhwal upto 1200 m. elevation on shady dry slopes.
Fl. Oct.-Jan.
Distribution: Sporadic throughout the valleys upto 1,600 m. elevation.
Medicinal use: The whole plant is used in tonic, anti-pyretics, anti-inflammatory and useful in Bronchitis and vata roga.

Trifolium pratense Linn.
Vernacular Name: Trepartra.
Habit: An erect perennial herb. Flowers red-purple nearly sessile.
Fl. April -July.
Distribution: Frequently distributed in the area.
Medicinal use: The whole plant is used as a diuretics.

Trifolium repens Linn.
Vernacular Name: Shaftal
Habit: A perennial glabrous hairy herb. Flowers white or tinged with pink,shortly stalked.
Fl. April-Aug.
Distribution: Sporadically distributed in temperate zone along Bhilangana and Bhagirathi valleys upto 3000 m. elevation.
Medicinal use: The fresh plant contains a cyanogenetic glucoside, yielding 0.0016 to 0.0124 percent of Hydrocyanic acid.

Trigonella corniculata Linn.
Habit: A glabrous herb, stem erect or nearly so, about 30-60 cm. Flowers yellow, pod glabrous.
Fl. July.
Distribution: Sporadically distributed in sub-alpine zone in Bhilangana and Bhagirathi valleys upto 3000 m. elevation.
Medicinal use: The whole plant is used in medicines as carminative.
Note: **Trigonella gracilis** Benth and **T. pubescens** Edgew are also found in this valleys.

Uraria lagopus DC.
Vernacular Name: Parni.
Habit: An erect under shrub, stem densely pubescent. Flowers numerous, purple.
Fl. Sept.
Distribution: Sporadically distributed throughout the hills upto 1500 m. elevation.
Medicinal use: The whole plant is used in medicine and sold in Dashmool Drabayas.

Uraria picta (Jacq.) Desv. ex. DC.
S.N. Prishnaparni.
Habit: An erect herb 1-2 m. high, finely clothed with booked and straight hairs. Flowers purplish.

Fl. Sept.
Distribution: Sporadic in tropical zone on grassy slopes upto 1200 m. elevation.
Medicinal use: The whole plant is used as anti-periodies, anti-spasmodis.

CAESALPINACEAE

Bauhinia Variegata Linn.
S.N. Kovidar, Kanchnar, *Vernacular Name:* Goriyal.
Habit: A large tree, flowers fragant and white-red.
Fl. - Feb. April.
Distribution: Cultivated in the area.
Medicinal use: Bark astringent and useful in skin diseases, menstrual disorders and glandular diseases.

Bauhinia retusa Roxb.
Vernacular Name: Kanadi.
Habit: A moderate sized tree. Flowers yellowish purple.
Fl. Sept.-Nov. *Frt.* Nov.-Jan.
Distribution: Common in tropical zone in moist shady slopes throughout the area upto 1500 m. elevation.
Medicinal use: The bark, flower-bud and the Gum are used medicinally. The bark is useful in skin diseases, ulcers and scrofula.

Phanera Vahlii Benth (**Bauhinia vallii** W. & A.)
Vernacular Name: Malo, Maljahan.
Habit: A large climber, stem more than 100 ft. long with very large leaves. Flowers white, pod rusty velvety10 cm. to 30 cm., 8 to 12 seeded.
Fl. May, June. *Frt.* cold season.
Distribution: Common in Garhwal region, especially in moist localities and shady hill slopes upto 1000 m.
Medicinal use: The seeds are used as tonic and aphrodisiac, roots useful for demulcent. Its pod is roasted locally and seeds eaten. Root fiber and leaves are very useful for the inhabitants.

Caesalpinia crista Linn. (**Caesalpinia bonducella** Eleming).
S.N. Lata - Karanja, *Vernacular Name:* Kanta - Karanja.
Habit: A much spreading, prickly climbing shrub. Flowers yellow. Pods large spiny, green to reddish-brown.
Fl. Sept.-Oct. *Frt.* Oct.-Jan.
Distribution: Sporadic throughout the valleys upto 1500 m. usually on moist slopes.
Medicinal use: The tender shoots and the seeds which are known as fever-units in some parts, are used medicinally. It is considered as a good substitute for quinine.
Note: **Caesalpinia sepiaria** Roxb. Kingari. This species is also found in Garhwal region.

Cassia fistula Linn.
S.N. Aragabhdh, *Vernacular Name:* Amaltas, Kirala.
Habit: A moderate sized tree, leaves paripinnate 30-60 cm. long. Flowers yellow; pod 30-40 cm. long.
Fl. March: June.
Distribution: Common in tropical zone throughout the valleys upto 1200 m. in Tehri-Garhwal, and North Garhwal areas.
Medicinal use: The fruits constitute an important source of medicine and are included in the Indian Pharmaceutical codex. The pulp from the fruits, called "cessia-pulp" is a well-known laxative. The bark of this tree is known as "sumari" and is rich in tannins.

Cassia occidentali Linn.
S.N. Kasmarda, *Vernacular Name:* Kasuondi.
Habit: A diffuse under shrub. Flowers yellow, pod glabrous.
Fl. July-Sept.
Distribution: A common weed on roadsides throughout the hills upto 1500 m.
Medicinal use: The whole plant is used in medicine.

Cassia leavigata Willd.
Vernacular Name: Shymsundri.
Habit: An erect under shrub with yellow flowers.
Fl. August.
Distribution: Sporadically distributed at Gupata Kashi, Ghuttu upto 1500 m. elevation.
Medicinal use: The pods are eaten as vegetable and the parts of the leaves is used on skin diseases and eczema.
Note: The following species are found in the Garhwal regions in moist and shady locality upto 1500 m. elevation:

1. **Cassia absus** Linn. Chaksu, an erect annual herb. Flowers reddish or yellow.
2. **C.obtusifolia** linn. - An Erect annual herb.
3. **C.sophera** Linn. - An Erect annual-perennial under shrub. Flowers yellow.
4. **C. mimosoides** DC. - An Erect annual herb.

Cassia Tora Linn.
S.N.: Chekramarda, *Vernacular Name:* Panwar.
Habit: An annual herb, stem 2-3 ft. high. Flowers yellow pod tapering.
Fl. July-Aug.
Distribution: A common weed growing throughout the lower hills upto 1200 m. elevation.
Medicinal use: Leaves and seeds are used in skin diseases for ring worm and itch.

Piliostigma malabarica (Roxb.) Benth. (=Bauhinia malabarica Roxb.)
Habit: Moderate to large sized deciduous tree. Flowers reddish-white.
Fl. Sept. Nov. Frt. Dec.-Jan.
Distribution: Sporadically distributed in the deciduous forest in Garhwal region.
Medicinal use: The whole plant is used as medicine in skin diseases.

MIMOSACEAE

Acacia catechu Willd.
Vernacular Name: Khir, Khdira.
Habit: A moderate sized tree. Flowers pale-yellow.
Fl. May-July.
Distribution: It is growing commonly in tropical zone throughout the area upto 1200 m. height.
Medicinal use: The bark and extract of the heart wood is an astringent and is also used for tanning purposes. It is anti-septic, bitter, cooling, anthelmintic and useful in skin diseases.

Albizzia lebbek Benth.
S.N. Sirisa, *Vernacular Name:* Sirasa.
Habit: A large deciduous tree. Flowers greenish white and fragrant.
Fl. April-May.
Distribution: It is found growing sporadic throughout the valleys upto 200 m. elevation.

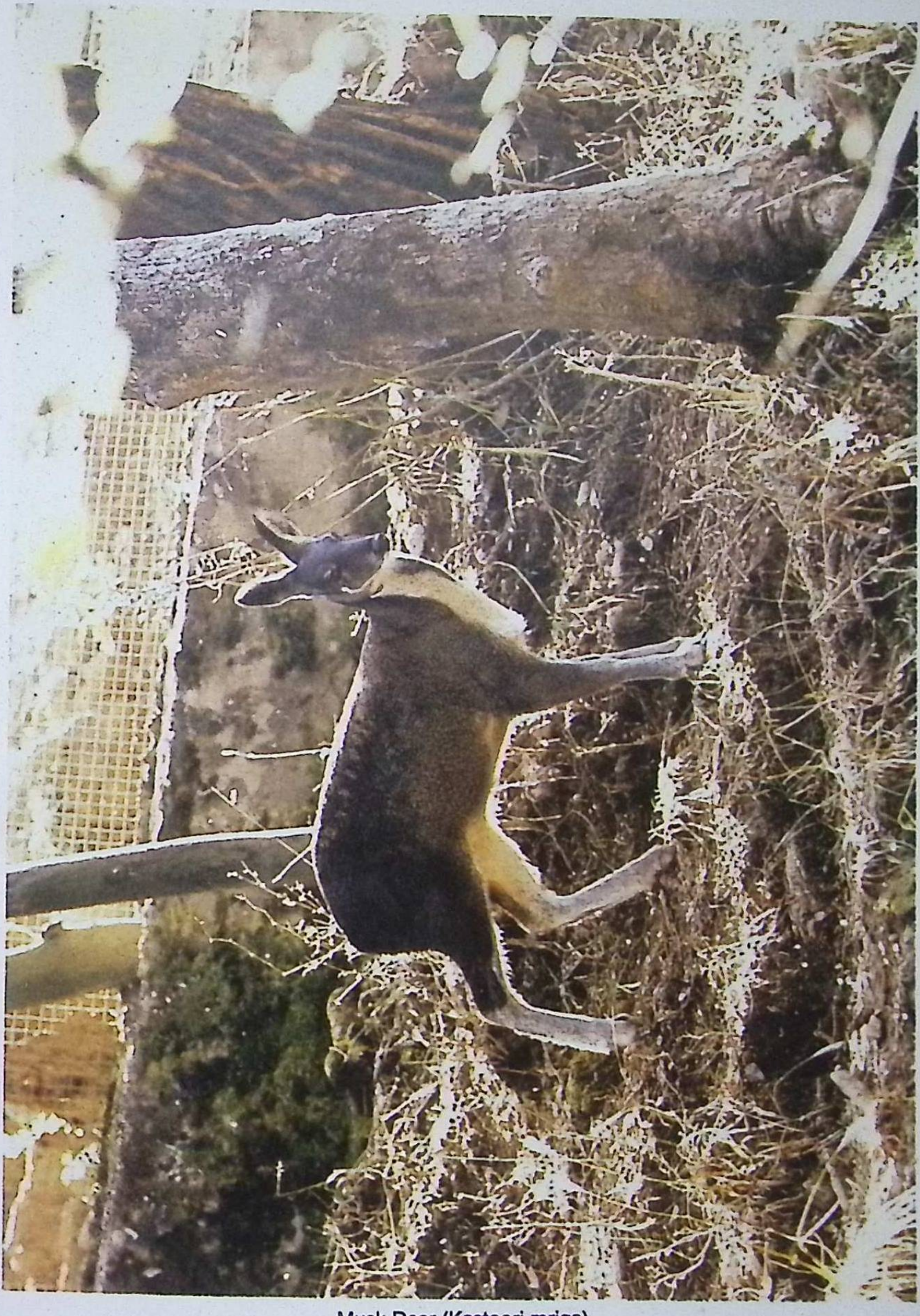
Albizzia odoratissima Benth.
S.N. Katabhi, *Vernacular Name:* Safed - siras.
Habit: A large tree. Flowers sessile, pale white.
Fl. - April.
Distribution: Sporadic in tropical zone upto 1200 m. elevation in Garhwal region.
Medicinal use: The bark is used for tanning and dyeing. The bark and seeds are used in indigenous medicine. The leaves and twings are used as fodder, especially for animals.

Mimosa Pudica Linn.
S.N. Lajjalu, *Vernacular Name:* Lajawanti.
Habit: A spreading herb. Flower in long peduncled heads.
Fl. - Aug. Sept.
Distribution: It is found wild in waste lands in the area upto 1200 m. especially in most places.
Medicinal use: The whole plant is used in piles and fistula. The leaves made into a paste and applied on Hydrecoele.

ROSACEAE

Agrimonia pilosa Ledeb. var. **napalensis** (D. Don) Nakai.
(· **Agrimonia eupatorium** Sensu Hook. f. auct. non Linn.)
Habit: A perennial, hairy herb; stems erect 60 cm. - 1 m. high. Flowers yellow about 7-8 cm. in diam. in terminal spikel like racemes.
Fl. June.
Distribution: It is growing commonly in Temperate zones of the area upto 2800 m. elevation.
Medicinal use: The whole plant is used in medicine. It is reported to contain an essential oil.

Cotoneaster affinis Lind. var. **bacillaris** (Lindl.) (= **Cotoneaster bacillaris** Wall. ex.Lindl.)
Vernacular Name: Runish.



Musk Deer (Kastoori mriga)

Habit: A large shrub with long, slender branches.
Flowers: white. Fruits black when ripe.
Fl. April-June. Frt. Sept.- Feb.
Distribution: Frequent in the temperate areas as secondary growth in the forests between 1300-2500 m.
Medicinal use: The leaves are used as fodder for musk deer.

Cotoneaster microphylla Wall. ex. Lindl.
Vernacular Name: Bhedda.
Habit: A small much-branched shrub. Flowers white; fruits pubescent, scarlet when ripe.
Fl. April-June.
Distribution: Common in open ravines and on grassy slopes upto 1500 m. height.
Medicinal use: The bark is used in medicine.

Geum urbanum Linn.
Habit: A softy hairy herb. Flowers pale-yellow.
Fl. June, July. *Frt.* July onwards.
Distribution: Common throughout the valleys in Garhwal Himalayas 1,800 to 3,000 m. elevation.
Medicinal use: The root is aromatic, having a clove odour and is sometimes chewed to sweeten the breath. The roots are medicinal.
Note: Geum elatum wall also found in alpine Himalayas in Garhwarl regions.

Fragaria nubicola Lindl. ex lacita. (**Fragaria vesca Linn.**)
Habit: A softly silky herb. Flowers white, fruits globose red when ripe.
Fl. May, June. *Frt.* - June onwards.
Distribution: Found commonly in temperate regions of Garhwal Himalayas above 1500 m. elevation at Bilargana valley, Bhagirathi valley and Alaknanda valley.
Local use: Locally the ripe fruits are edible.

Prinsepia utilis Royle
Vernacular Name: Bhikal.
Habit: A spinous shrub, flowers white in short axillary racemes. Drupe-purple.
Fl. Dec.-April. *Frt.* May-July.
Distribution: Found common in temperate region in Garhwal Himalaya 1200 to 2,400 m.
Local use: The oil is extracted from the seeds which is used for burning. It is also applied externally in rheumatism.

Potentilla argyrophylla Wall. ex. Lehm.
Habit: A perennial herb. Flowers yellow.
Fl. - July-Aug.
Distribution: It is growing sporadic in temperate zone on grassy slopes upto 2,700 m. altitude.
Medicinal use: Locally the whole plant is used as medicine for refrigerants and stomachics.

Potentilia fulgens Hook.
Habit: A perennial herb, stems robust, erect 15-40 cm. high. Flowers yellow or orange-yellow.

Fl. July-Aug.
Distribution: It is growing commonly in temperate zone on grassy slopes upto 2700 m. altitude.
Local use: Locally the whole plant is used as antiperiodic.

Potentilla napalensis Hook.
Habit: A perennial herb, stems erect 30-175 cm. high. Flowers in spreading panicles dark crimson, 1-5 cm. in diam.
Fl. April.
Distribution: It is growing commonly in the temperate zone on grassy slopes throughout the Garhwal upto 3000 m.
Medicinal use: Locally the whole plant is used as medicine for antiseptic and blood purifier.

Prunus cerasiodes D. Don.
S.N. Padamaka,
Habit: A moderated sized tree, bark brownish-grey. Flowers rose or pink.
Fl. May.
Distribution: It is found growing sporadic throughout the valleys upto 2100 m. elevation in Garhwal regions.
Medicinal use: Locally the bark is used in the preparation of hair oil for massage. The paste of the bark is applied over the forehead for hemicrania and is also used as plaster for fractures and dislocations. The bark is also stated to contain hydrocyanic-acid yielding substances.

Prunus Cerasus Linn.
S.N. - Albaluka, *Vernacular Name:* Chulu.
Habit: A decicuous shrub or a small tree. Flowers whitish-pink. Fruits globose, bright-red.
Fl. March-April.
Distribution: Cultivated in the Himalaya upto 2400 m. altitude.
Medicinal use: Locally the fruits are eaten. The oil from the seeds have been found to contain the cyanogentic glucoside- amygdalin.

Prunus Cornuta (Wall) Steud. (Prunus padus sensu Hook.f. auct. non Linn.)
Vernacular Name: Jamini, Jamoni.
Habit: A small to moderate sized tree. Flowers white; fruits green, ovate.
Fl. April-May. *Frt.* July-Oct.
Distribution: It is growing commonly on the road sides or Bhilangna valley and Bhagirathi valleys ranging betwen 1800 to 3600 m. altitude in the temperate regions.
Medicinal use: Locally, the poultice made out from the seeds is used for relieving joint pains etc.

Prunus persica (Linn) Batsch.
Vernacular Name: Aru, Aruka.
Habit: A large shrub or a small tree with pink flowers.
Fl. - March-April.
Distribution: It is widely cultivated in the Garhwal area upto 2100 m. altitude.
Medicinal use: Locally, the fruits are edible. The leaves are said to have insecticidal and vermicidal properties.

Prunus armeniaca Linn.
Vernacular Name: Chilu
Habit: A medium sized deciduous tree. Flowers pinkish at first, then turning white.
Fl. March-April.
Distribution: A native of N. China. commonly cultivated in the Garhwal region upto 2400 m. altitude.
Medicinal use: The apricot is a well known favourite fruit and it is eaten both fresh and dried. The seeds are eaten in the same way as almonds and in fact, form a valuable substitute. The oil extracted from the seeds is largely used for cooking etc.

Pyracantha crenulata Roem. (**Crataegus crenulata** Roxb)
Habit: A large spinescent evergreen shrub. Flowers white; fruits orange to red, when ripe.
Fl. - April-May. *Frt.* July-Nov.
Distribution: This plant is found growing commonly in the ravines throughout the valleys upto 1800 m. altitude.
Local use: The fruits are eaten when ripe. and are used as cardic tonic..

Pyrus lanata D. Don
Vernacular Name: Pathil
Habit: A moderate sized deciduous tree. Flowers white.
Fl. April-May.
Distribution: Sporadically distributed at Jaunsar, Ponwal, Kedarnath etc. upto 2400 to 3000 m. altitude.
Local use: Locally the ripe fruits are eaten.

Pyrus pashia Buch. Ham. ex D.Don
Vernacular Name: Mehal.
Habit: A small deciduous tree. Flowers white; fruits globose, dark brown.
Fl. Feb.-April. *Frts.* Dec.-Feb.
Distribution: It is growing commonly in the tropical zone throughout the hills upto 1500 m. altitude.
Local use: Locally the bark is used in medicine. Fruits are edible.

Rosa moschata Mill. ex Herrmann
S.N. Koubajaka, *Vernacular Name:* Kuja.
Habit: A large throny climbing shrub. Flowers sweet, scented and white.
Fl. April-June.
Distribution: Common throughout the valleys upto 1900 m.
Medicinal use: Locally the flowers are used in medicine. The rose perfume is marketed in several forms. Rose water (gulab jal) also used in medicine.

Rosa sericea Lindl.
Vernacular Name: Jangali-Gulab
Habit: A thorny shrub 1-3 m. high. Flowers white or pink.

Fl. - July-Aug. *Frt.* Sept.-Oct.
Distribution: It is growing sporadically in the temperate zones at Kedar Nath, Ponwali, Badri Nath between 2400 to 3600 m. altitude.
Medicinal use: Locally the syrup made out of the flowers is used in epilepsy and insomnia.

Rubus ellipticus Sm.
Vernacular Name: Hinsalu.
Habit: A large thorny shrub with white flowers ; fruits red.
Fl.: Jan. March. *Frts.* May, June.
Distribution: Common throughout the valleys upto 1,900 m. elevation.
Medicinal use: The ripe fruits are edible. Leaves are used as abortifacients.

Rubus paniculatus Smith
Vernacular Name: Kala Anchu.
Habit: A large rambling shrub. Flowers pinkish-white; fruits black when ripe.
Fl. June-July. *Frts.* July-Sept.
Distribution: Common in tropical zone, throughout the valleys, ravines and outer hills of the area extending upto 1800 m. altitude in Garhwal Himalayas.
Local use: The ripe fruits are eaten locally. Bhatia amchi used whole plant as Katakari.

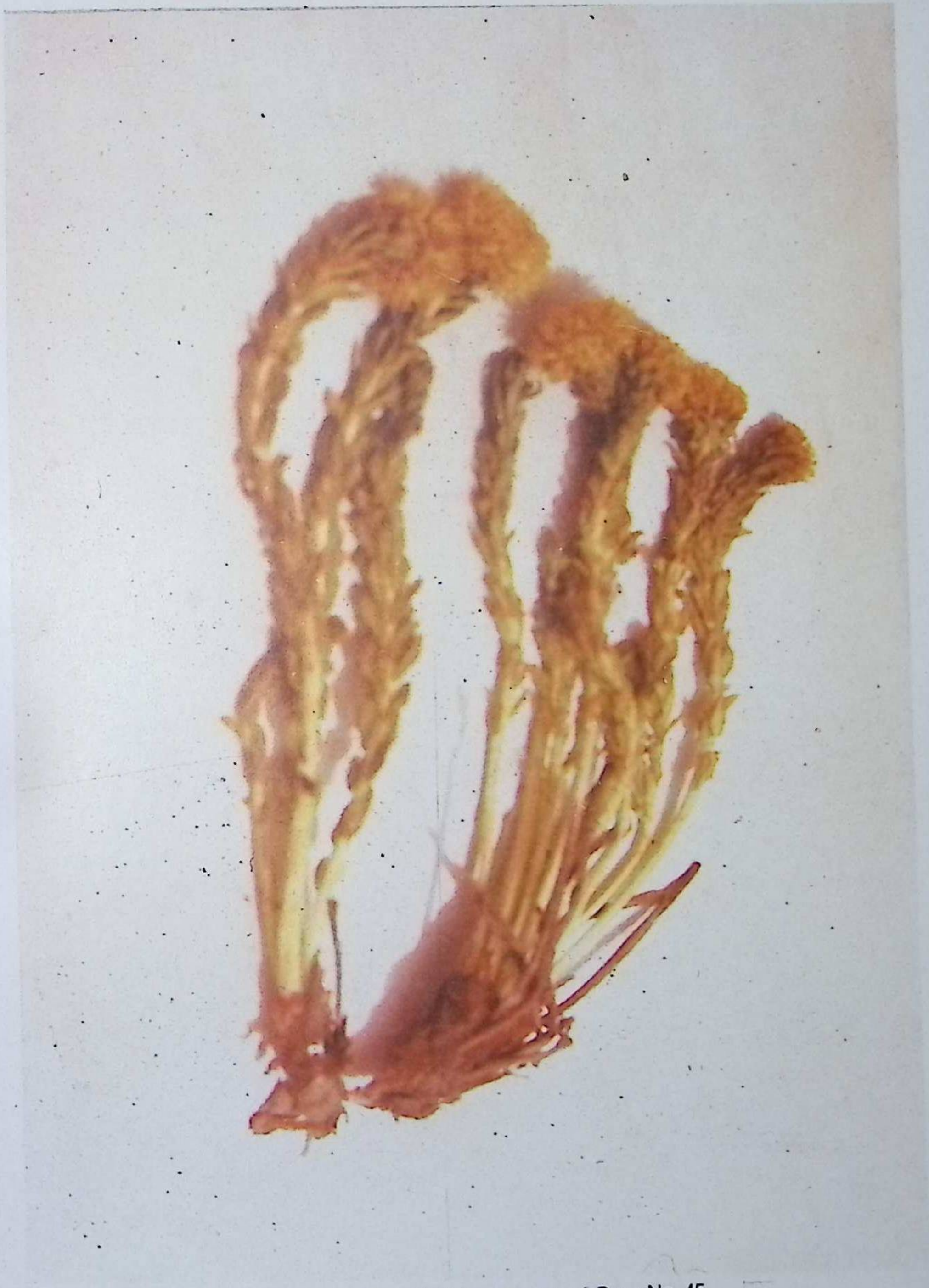
Sorbaria tomentosa (Lindl.) Rehder. (**Spiraea serbifolia** Sensu Hook.f. **non** Linn.)
Habit: A small shrub. Flowers white + 0.5 cm.
Fl. & Frts. July-Aug.
Distribution: Sporadic in termperate zone at Bhagirathi and Mandakini valleys upto 2400 m. altitude in Garhwal Himalayas.
Medicinal use: The leaves, twigs and roots are stated to yield Hydrocyanic acid. The seeds contain a saponin.

SAXIFRAGACEAE

Bergenia ciliata (Royle) Raizada.
S.N. Pashan-bhed, *Vernacular Name:* Silparo.
Habit: A small, lithophytic herb ; leaves ciliate. Flowers pink.
Fl. - March-April.
Distribution: Common in shady rocks, throughout the valleys upto 2400 m. altitude.
Local use: Locally the rhizomatic roots are used in urinary disorders and menorrhagia.

Bergenia ligulata (Wall) Engl.
S.N. Pashan-bheda, *Vernacular Name:* Silparo.
Habit: A large, thick stemmed lithophytic herb. Flowers whitish pink.
Fl. Feb-March.

Medicinal Plants of
Garhwal Himalayas



Sedum crassipes Wall (Luguru sarpo) Page No. 45

Distribution: Common in shady ravines of rocks, usually growing as rocky vegetation distributed in temperate zones of the area upto 2700 m.
Medicinal use: Locally, the rhizomatic stem is used in urinary disorders and menorrhagia. The decoction of the rhizome is used to dissolve the stones of the kidney and the urinary bladder.

Bergenia stracheyi (Hook f.th.) Engl.
Vernacular Name: Pashanbheda.
Habit: A stout, rhizomatic herb. Leaves fleshy, which turn red during autumn. Flowers pinkish white.
Fl. July-Aug.
Distribution: It is found growing abundantly on glacial beds at Kedar Nath; Ponwali, Tali, Gangotari Yamuna valley etc., upto 3900 m. altitude, in Garhwal Himalayas.
Medicinal use: The leaves are locally used as "Bhotiachai". The Rhizome powder is used in menorrhagia. Mixed with Gokhru (**Tribubus terrestris**)the rhizome powder is given for disurea and for dissolving stones.

Ribes rubrum Linn.
Habit: A pubescent or nearly glabrous herb. Flowers greenish yellow. Berry + 0.5 cm. in diam., Red.
Fl. May-June. *Frts.* Oct.
Distribution: It is found growing sporadic in tenmperate zones at Gangotri, Herkee Dun. etc. upto 3600 m. altitude in Garhwal Himalayas.
Medicinal use: Locally the leaves and fruits are used as aromatic, hydrocyanic acid and essential oils have also been reported.

CRASSULACEAE

Kalanchoe integra (Medik.) O. Ktze. (**Kalanchoe spathulata** DC.)
Vernacular Name: Jakhanihayat.
Habit: A glabrous,succulent perennial ± 30-120 cm. high. Flowers yellow.
Fl. Sept.-Nov.
Distribution: It is growing sporadic in sub-tropical Himalayas at Inrola, Ghuttu, ranging from 600 m. to 1500 m. altitude.
Medicinal use: It is poisonous to goats and other cattles. The leaves are stated to be poisonous to insects.

Sedum crassipes Hook f.
Habit: A small herb with yellow flowers.
Fl. June, July. *Frts.* July, Aug.
Distribution: It is growing sporadically on rocks, in the temperate zones of the area upto 2800 m. altitude .

Medicinal use: The whole plant is used as a emollient and Vamika
Note: Following species are found in Garhwal alpine Himalayas on glacial bed.

1. **Sedum quadrifidum** Pallas. Annul or perinnal herb.
2. **S. rosulatum** Edgew Herb on rocks, Fl. White.
3. **S. Ewersii** Ledeib. Rocky herb, Fl. Purple.

Sedum multicaule Wall. ex Lindl.
Habits: A glabrous, erect herb. Flowers yellow.
Fl. March-Aug.
Distribution: It is growing sporadically on rocks and rocky crevices, throughout the valleys upto 2400 m. altitude.
Medicinal use: Locally the whole plant is used in medicine as expectorant and vamka.

HYDRANGEACEAE (Nom. fam. cons.) (Saxifragaceae)

Hydrangea aspera Buch.-Ham.
Habit: An erect shrub, pubescent, flowers in hirsute, corymbs, sepals usually serrate.
Fl. July. *Frt.* Dec. Feb.
Distribution: Found in temperate regions in Garhwal Himalayas, Bhilangana valley, Bhagirathi valley, Yamuna valley on the slopes in moist and shady places.
Medicinal use: Bark and leaves used in cardic tonic in piles and Pradara.**H. altissima** Wallare also used locally.

MELASTOMACEAE

Osbeckia stellata Wall ex Don.
Habit: An erect shrub, leaves opposite, flowers very handsome purple-blue.
Fl. July, Sept. *Frt.* April, June.
Distribution: Found sporadic in outer part of Garhwal regions upto 2,000 M.
Medicinal use: The flowers are used as nervous sedative and are useful in piles.

DROSERACEAE

Drosera peltata Sm.
Habit: An erect, slender herb upto 30 cm. high. Flowers white ± 0.5 cm. across.
Fl. Aug.-Sept.
Distribution: Sporadically distributed at Ganghi, Ganganani and at Bhagirathi valley upto 3000m. growing in rocky habitate.

Medicinal use: It is used as a blistering agent. The juice of the plant is red, as it leaves a red stain on the paper on drying.

MYRTACEAE

Syzygium jambos (Lam.) Alston
Vernacular Name: Jamum, S.N. Jambu
Habit: A large evergreen tree. Flowers greenish sub-sessile; berry deep-pink when ripe.
Fl. April, May. *Frts.* May-June.
Distribution: Frequently growing throughout the valleys upto 1200 m. altitude in Garhwal foot hill.
Medicinal use: The bark, fruits and seeds of the tree are medicine. The bark is very astringent and used in sore throats, bronchitis, ulcers and dysentery,The seeds are useful in diabetes.

PUNICACEAE

Punica granatum Linn.
S.N. Dadima,*Vernacular Name:* Dalimo.
Habit: A moderate sized shrub or a small tree. Flowers red, sessile. Fruits large, globose.
Fl. April-May.
Distribution: Common in the ravines and valleys of the Garhwal area upto 1800 m. elevation. It grows, wild in the north-west Himalayan region.
Medicinal use:. The rind of the fruit is astringent, and is used in the preparation of medicines. It is also used as a tanning agent. The fruits are edible.

LYTHRACEAE

Woodfordia fruticosa Kurz.
S.N. Dhataki, *Vernacular Name:* Dhaulu.
Habit: A large shrub with long spreading branches. Flowers axillary cymes and red.
Fl. March-April. *Frts.* May, June.
Distribution: Common throughout the valleys upto 1500 m. in Garhwal regions.
Medicinal use: The flowers are astringent and useful in effections of mucous membrane of bilious complaints. Dried flowers are used in dysentery.
The flowers give a red dye, which is used for dyeing silk.

ONAGRACEAE

Epilobium hirsutum Linn.
Vernacular Name: Bhilu.
Habit: A densely hairy annual herb, 60-100 cm. high. Flowers pink or purple.

Fl. Aug.- Sept.
Distribution: Sporadic in temperate zones of the area extending upto 2400 m. altitude.
Medicinal use: The plant is poisonous and used as application on warts etc. Whole plant is used in Tibbetian system of medicine.

CUCURBITACEAE

Bryonopsis laciniosa (Linn.) Naud.
Vernacular Name/ S.N. Bahuputara.
Habit: A spreading climber. Flowers yelow; fruits red when ripe; seeds black.
Fl. - July-Aug.
Distribution: Common in the valleyş upto 1600 m. usually growing on shady areas near valleys.
Medicinal use: The whole plant is used as a bitter tonic. The seeds are used in the preparation of indigenous drugs, specially used as putardha.

Coccinia cordifolia (Linn.) Cogn. (**Coccinia indica** W. & A.)
S.N. Bimbi, *Vernacular Name:* Kanduri.
Habit: A climbing climber with white flowers. It is growing commonly in hotter part of the Garhwal upto 1500 m.
Fl. - Jan.
Distribution: Sporadic in throughout the valleys upto 1,500 m. in scrub forest.
Medicinal use: The juice of the leaves and the roots are used in diabetes. The leaves applied externally in the eruptions of skin, unripe fruits used as vegetable.

Cucumis trigenus Roxb.
Habit: A slender, climbing shrub. Flowers yellow; fruit pale-yellow when ripe.
Distribution: It is found growing sporadically throughout the valleys upto 1500 m. altitude in Garhwal region.
Medicinal use: The pulp of the fruit is a drastic purgative. The seeds are cooling and useful in bilious disorders.

Solena heterophylla Lour (**Melothria heterophylla** (Lour. Cong.)
Vernacular Name: Bankundura.
Habit: A slender climber with tuburous roots. Flowers small, red when ripe.
Fl. - July-Aug.
Distribution: It is growing sporadically throughout the area upto 1800 m. in throny forest and grassy slopes.
Medicinal use: The juice of the root alongwith cumin and sugar is given in cold milk as a remedy for spematorrhoea. The root is used in diabetes.

Momordica charantia Linn.
S.N. Karbeilaka, *Vernacular Name:* Karila.

Habit: A slender climber. Flowers monoecious, yellow; fruits yellow, when ripe.
Fl. July-Sept.
Distribution: It is growing wild on the hills upto 1500 m., usually on shady slopes upto 160 M.
Medicinal use: The whole plant is used in the preparation of indigenous medicine. The leaves have purgative, emetic and bitter properties. The plant contains about 0.038 percent of alkaloid. The fruit is eaten as vegetable specially useful in diabetes.

Trichhosanthes bracteata (Lam.) Voigt
S.N. Vishala. *Vernacular Name:* Ilaru,
Habit: A robust, spreading climber. Leaves 3-5 lobed. Flowers white; fruits globose, red when ripe.
Fl. June-Sept.
Distribution: Common in moist ravines throughout the valleys upto 1800 m. altitude.
Medicinal use: Locally, the decoction of the plant part is used in rheumatism. The mature seeds are claimed to be useful in Birth control. The root is stated to be poisonous. It is said to contain a bitter principle named "Trichosanthin".

Gymnopetalum cochinchinese (Lour.) Kurz
(Trichosanthes cucumerina Linn.)
Vernacular Name: Jangali Chachinda.
Habit: Slender climber, leaves 5-10 cm. cordate. Male flowers in axillary racemes, white, fruit 2.5 - 7 cm. long, yellow when ripe.
Fl. July, Aug.
Distribution: Common throughout the valleys usually on moist slopes, upto 1500 m. altitude in Garhwal region.
Medicinal use: The whole plant is used in the preparation of indigenous medicines. It is used as a Laxative and tonic. The juice of the leaves is emetic and the root acts as a powerful cathartic agent.

SAMYDACEAE

Casearia elliptica Willd. (Casearia tomentosa Roxb.)
Vernacular Name: Chilla.
Habit: A large shrub or a small tree. Flowers greenish-yellow; fruit yellow, elliptoid.
Fl. Dec. Jan. *Frts.* May, June.
Distribution: Common throughout the valleys upto 900 m. elevation.
Medicinal use: The leaves, bark and the pulp of the fruit are used medicinally. The milky acrid juice of the fruit is employed to poison fish.

Casearia graveolens Dalz.
Vernacular Name: Chilla.

Habit: A glabrous shrub, deciduous or a small tree. Fruits elliptic-oblong, green to yellowish-orange, 2 cm. across.
Fl. & Frts. April-Aug.
Distribution: Sporadic in the sub-tropical zone - extending from 600 to 1500 m. altitude.
Medicinal use: Fruit is used to poison fish. An infusion of the fruit is also said to have poisonous effect on human beings.

Anogeissus latifolia Wall.
Vernacular Name: Bankli, Dhava.
Habit: A tall tree, flowers small in globose heads, and axillary racemise.
Fl. & Frts. May, June.
Distribution: Common in the outer ridges slopes, ascending upto 1600 m. altitude.
Medicinal use: The tree yields a very clear gum which is soluble in water, and the leaves are much valued for tanning.

COMBRETACEAE

Terminalia chebula Retz.
S.N. Haritaki. *Vernacular Name:* Harada.
Habit: A moderate to large deciduous tree. Flowers yellowish-green, small.
Fl. & Frt. Dec. Jan.
Distribution: Sporadic throughout the valleys on dry slopes upto 900 m. altitude.
Medicinal use: The fruits are extolled by the ancient Hindu Physicians as a powerful alternative and tonic. The fruits of **T.Bellirica T.Chhebula and Phyllanthus emblica,** form one of the well known Ayurvedic preparation called Triphala as laxative and tonic. The 'myrobalan' (Fruit) can be applied externally on chronic ulcers, wounds and scalds. It is also used as a gargle in the inflammation of mucous membrane of mouth.

Terminalia belerica Roxb.
S.N. Vibhitaka, *Vernacular Name:* Bahera.
Habit: A large deciduous tree 20 m. or more high. Flowers pale greenish yellow.
Fl. & Frts. May, June, Dec. Jan.
Distribution: It is growing sporadically throughout the valley upto 1200 m. usually on dry slopes.
Medicinal use: The unripe fruit is astringent, while the ripe one is used as a purgative. The dried pulp of one full grown ripe fruit is sufficient to cause purgation. The fruits contain 5 to 17 percent of tannin.

APPIACEAE (Umbelliperae)

Angelica glauca Edgw.
S.N. Choraka, *Vernacular Name:* Chora.
Habit: An erect herb, 0.5m high. Flowers white in umbels.

Fl. June, July.
Distribution: Sporadically distributed on the moist slopes of the alpine zones of the area between 2700 m. to 3600 m. altitude, in Bhilanguna valley, Bhagirathi valley and Alaknanda valley.
Medicinal use: The root - stock is aromatic and is used as condiment. It is also used in removing flatulance and in dyspepsia and it has aromatic, stimulant, carminative, diaphoretic and expetorant properties. The thin root-lets are particularly rich in essential oil and aromatic.

Bupleurum falcatum Linn.
Vernacular Name: Singu.
Habit: A perennial herb, 60-100 cm. high. Flowers yellow.
Fl. - June, July.
Distribution: Common on grassy slopes from 900 m. to 3000 m. altitude, throughout the valleys in Garhwal region.
Medicinal use: The roots are useful in liver troubles and abdominal inflamation and fever. The oil contains a new alcohol, bupleurumol.
Note: The following species are found in the Garhwal Himalayas between 2,200 M. to 4,000 M. elevations.

1. **Bupleurum lanceolatum** Wall ex. DC. - An erect perennial herb. Fruits ovoid ridged.
2. **B.jucundum** Kurz. An erect herb, stem 30-60 cms. fruit elliptic, oblong, ridged.
3. **B.candolii** Wall ex. DC. - An erect glabrous herb fruit ovoid, distinct.
4. **B. tennu** D.Don - An erect glabrous herb. Fruit oblong, ridges, yellowish, brown. Essential oil also found from the leaves, stem and flowers.

Appium tennuifolium Thell (**Apium leptophyllum** F. Muller).
Habit: An erect herb, flowers umbels growing sporadic in Dehradun, Massorie, Kanatal area upto 2,100 m.
Medicinal use: Seeds carminative and essential oil is also; found from the leaves and flowers.

Carum carvi Linn.
S.N. Krisharajeerka, *Vernacular Name:* Jeero, Jeerka.
Habit: An annual cultivated herb, flowers white, aromatic, fruit oblong ridged. Found sporadic near Badrinath and Yamuna valley.
Medicinal use: Seed carminative, antiemetics, diuretics, expectorants and aromatic.

Centella asiatica (Linn.) Urban.
S.N. Mandukparni, *Vernacular Name:* Brahmi.
Habit: A small trilling herb. Leaves undivided, small 2-4 cm. diameter. Flowers minute, pinkish-red 3-6 in umbels. Fruit laterally compressed.
Fl. Throughout the year.
Distribution: Common in moist place throughout the valleys upto 1,800 m. altitude in Garhwal region.
Medicinal use: Locally the leaves are used as brain tonic, the leaves or the entire plant is boiled

in water and this decoction is given for treatment of leprosy. The plant contains asiaticoside, which is considered responsible for its use in leprosy. The plant is also considered useful in certain kinds of tuberculosis.

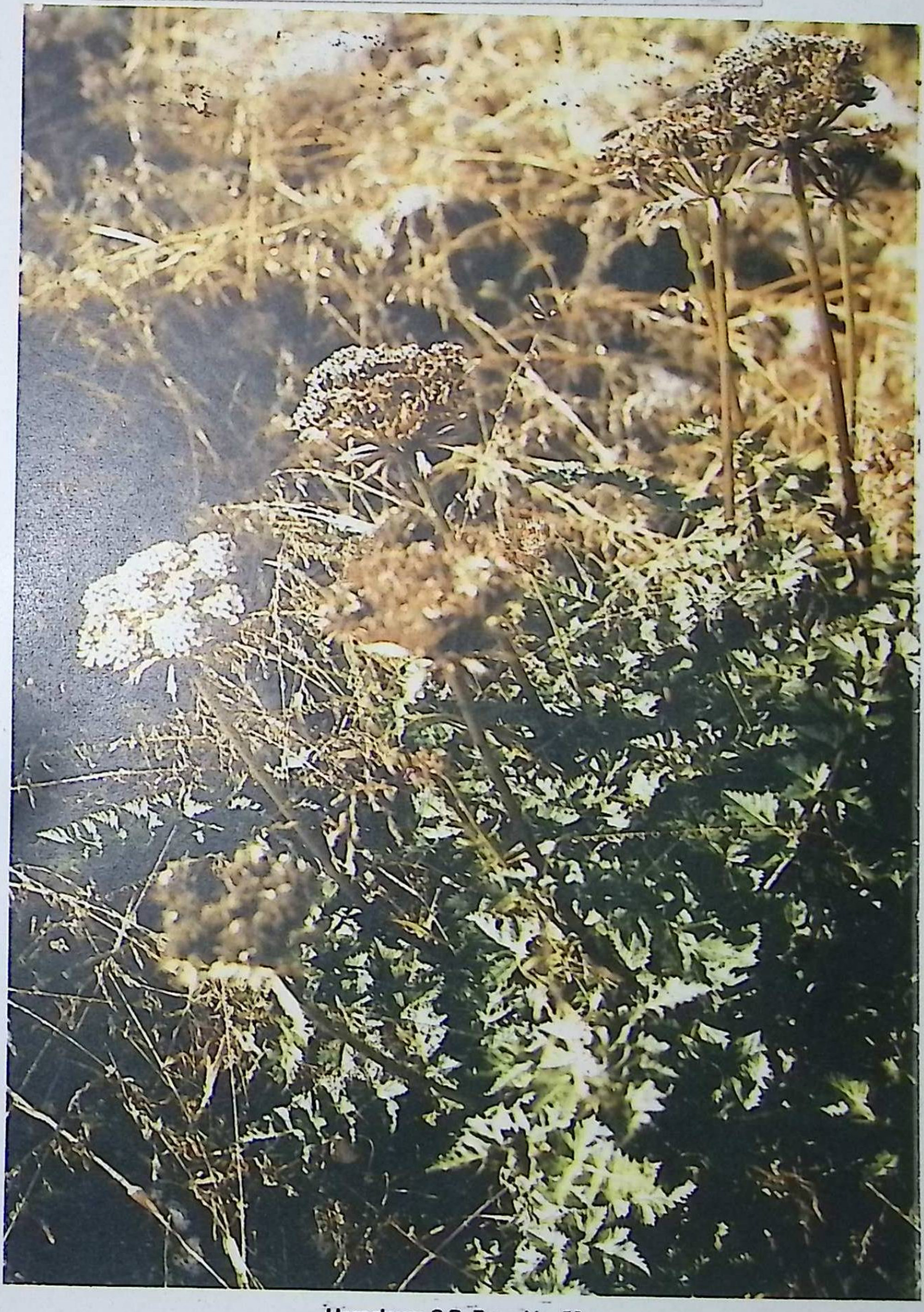
Heracleum candicans Wall.ex DC.
S.N. Chhatara, *Vernacular Name:* Chhataya.
Habit: A large herb with white flowers. Leaves pinnatifid pinnae obtusely lobed. Fruits pubescent and abovate.
Fl. June, July.
Distribution: Common in tropical zone throughout the valley upto 2,100 m.
Medicinal use: Locally the root powder is used in nerves disorders. Fruits are used as spices.

Heracleum pinnatum C.B. cl.
Vernacular Name: Gandhrayan.
Habit: An erect herb 60 – ±0·120 cm. high. Leaves pinnate pinnae ovate toothed. Flowers white, root aromatic. Fruit abovate winged.
Distribution: Sporadic in alpine zone in Uttarakhand Garhwal from 300 m. to 3,900 m. moist slopes.
Medicinal use: Locally the fruits are used as carminative and aromatic. The roots and seeds of some species are poisonous, essential oil is also reported.

Hydrocotyle Javanica Thunb.
Habit: A small herb, leaves deeply cordate, flowers yellow-green.
Distribution: Sporadic in moist slope in Uttara-Khand Garhwal from 900 m to 2,400 m. at Bhilongana valley, Bhagirathi valley and Yamuna valley.
Fl. - August, Sept.
Medicinal use: The whole plant is used as substitute for **C.asiatica** used for Braintonic.

Hydrocotyle rotundifolia Roxb.
Habit: A glabrous herb, leaves kidney shaped flowers pale-white.
Distribution: Sporadic throughout the valleys upto 1900 m. in Garhwal Himalayas on moist places.
Fl. June, July.
Medicinal use: The whole plant is used as **H. Javanica.**

Pimpinella diversifolia DC.
Habit: An erect herb, stem 3 to 100 cm. ft. high. Flowers white fruit laterally compressed ridges of the fruit slender.
Fl. July.
Distribution: Common throughout the Himalayas upto 1,500 m.
Medicinal use: The whole plant is used as a carminative. Roots and fruits are also used in Amchi medicine.



Heracleum S.P. Page No. 52

Pleurospermum angelicoides Benth.
Habit: An aromatic herb, 60 + 0.90 cm. high,flowers white. Fruit for dorsally compressed.
Fl. July *Frt.* August Sept.
Distribution: Sporadic in alpine moist slopes in Uttara Khand Himalayas from 3,800M. to 4,200M.
Medicinal Use: The whole plant is used in medicine. Roots are used as carminative. Whole plant is also used as aromatic dhup.
Note: The following species are found in Garhwal Himalayas in glacial bed and alpine slopes 3,600 M. to 4,000 M. elevation:

1. **Pleurospermum angelicoides** (DC) Clrake Aromatic herb, fruit aromatic, elliptic.
2. **P. densiflorum** clarke, Hook f. - Aromatic herb, fruits oblong green.
3. **Pvstylosum** clarke Aromatic herb, flowers white, fruits - longer. The above spicies are used in Tibetan system of medicine.

Pleurospermum candolli Benth
Herb: An aromatic herb with white flowers.
Locally the whole plant is used as dhup aromatic.

Selinum Wallichianum (DC) Rhizada.
(**S. tenuifolium** Wall ex. DC.)
S.N. Bhutakeshi, *Vernacular Name:* Bhutkesh.
Habit: A tall aromatic perennial herb, stems 60 to 100 cm. high. Leaves very compound. Ultimate pinnae 1/2 in broad ellipt, Flowers white.
Fl. June, July. *Frt.* Aug. Sept.
Distribution: Common in sub-alpine and alpine zone meadows in Uttarkhand Garhwal, 2,700 m.
Medicinal use: The rhizomes are locally used in epilepsy and nervous disorders and in making incense. As an ingredient it is used in Ayurvedic preparation.

Selinum vaginatum C.B. Clarke.
S.N. : Mura-Mansi.
Habit: Tall aromatic perennial herb with white flowers. Leaves very compound, secondary pinnae mostly 1 in lanceolate.
Fl. - July-Aug.
Distribution: Sporadic in alpine meadows throughout the valleys, 3,300 m.
Medicinal use: The roots are used same as on S. Teniufolium. It is useful in unmada (Insanity). It has also called 'Muramansi'.

Trachyspermum falconeri Woolf.
Habit: An aromatic erect herb, stem 60 – o 100 cm. high, flowers white fruit aromatic.
Fl. - July.
Distribution: Common in tropical zone on grassy slopes in Uttarakhand Garhwal upto 1,600 m.
Medicinal use: The whole plant is used as carminative. The seeds are used in abdominal pain.

ARALIACEAE

Hedera nepalensis K. Koch.
Vernacular Name: Bano.
Habit: Evergreen woody climbing shrub with yellow polygamous flowers, petals valvate. Fruits globose, black when ripe. All ruminated.
Fl. April, May *Frt.* Aug. Sept.
Distribution: The plant is found growing commonly in temperate zone throughout the valleys upto 2700 m.
Medicinal use: The leaves and beries are used as stimulant and diaphoretic.

FICOIDACEAE

Mollugo nudicaulis Lam.
Habit: An annual herb, flowers pinkish white.
Distribution: It is growing sporadic on moist slopes in tropical zone upto 1200 m.
Fl. June, July.
Medicinal use: The leaves are applied to boils to relieve pain. Plant is considered useful in whooping cough. The leaves of the plant are useful for fomentation in glandular enlargements of indocent ulcers etc.

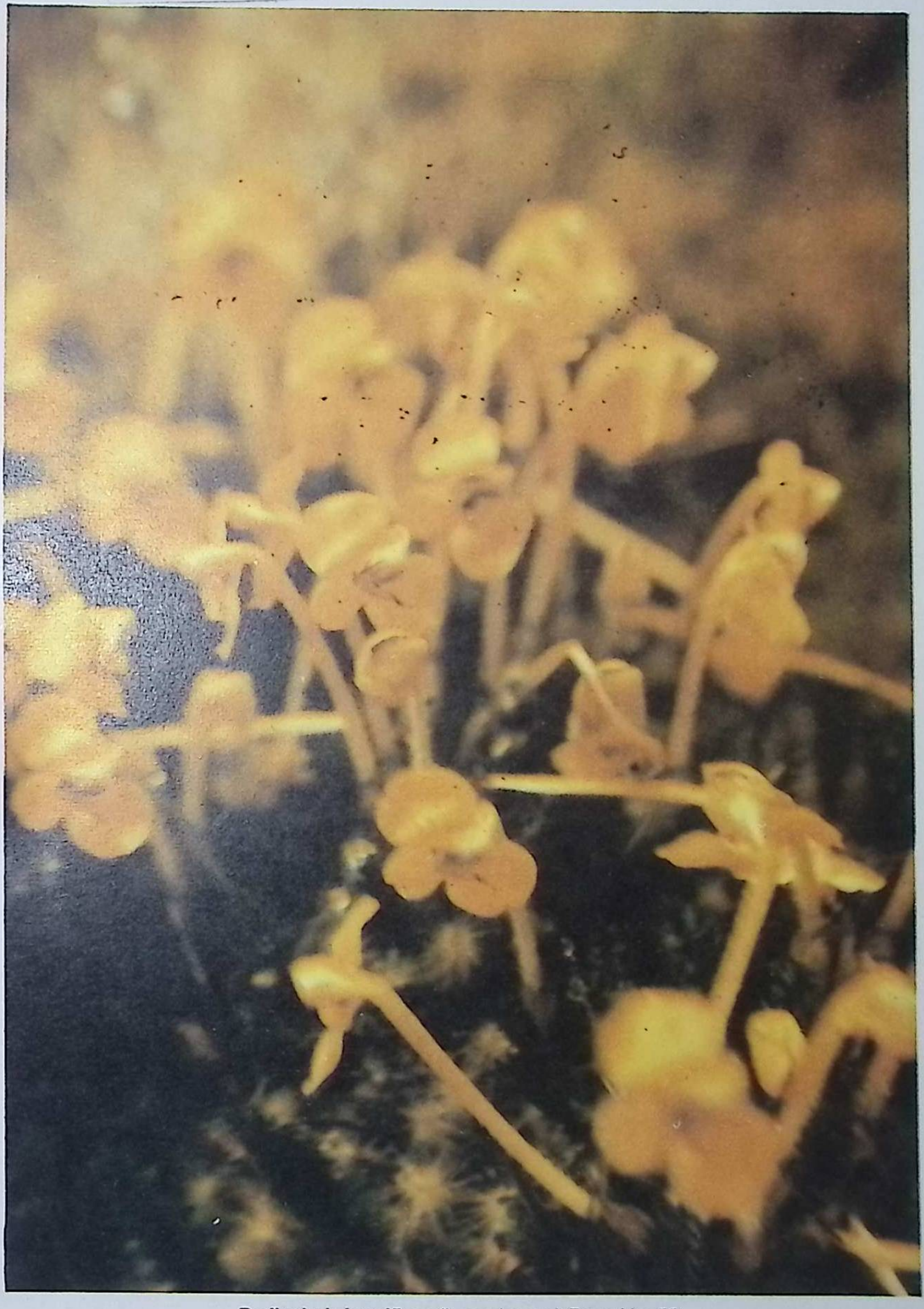
CORNACEAE

Cornus capitata Wall.
Vernacular Name: Bhamora,
Habit: A small decidous tree, leaves opposite. Flowers yellowish white. Fruits coalesced fleshy.
Fl. Feb, March.
Distribution: The plant is growing sporadic in outer Himalayas from 1200 m. to 2400 m.
Medicinal use: Locally the ripe fruits are eaten.
Note: **Cornus macrophylla** Wall and **C.Oblonga** Wall. also found in Garhwal region upto altitude.

RUBIACEAE

Adina Cordifolia Hook.
Vernacular Name: Haldu.
Habit: A large decidous tree. Flowers yellow. downy.
Fl. June, July.
Distribution: It is growing commonly in outer Himalaya upto 1200 m.
Medicinal use: The bark is used as a febrifuge and antiseptic.

Galium aparine Linn.
Habit: An annual herb, flowers white tinged with green.



Pedicularis longiflora (Lugrukappo) Page No. 55

Fl. July, Aug.
Distribution: It is found growing sporadic in temperate zone on shady places ascending to 3600 m. in Garhwal region.
Medicinal use: The juice of the plant is diuretic, but not locally used.

Galium rotundifolum Linn.
Habit: An annual herb. Flowers white tinged. It is growing sporadic moist placed upto 1200 m. at Bhagirathi valley.
Fl. July.

Hamiltonia suaveolens Roxb.
Vernacular Name: Padariya.
Habit: An erect shrub, 120 to 200 cm. branches, spreading. Flowers are sometime white.
Fl. Dec., Jan.
Distribution: It is found growing commonly in outer hills of Garhwal on tropical zone upto 1800 m. in Garhwal region. It is found growing commonly in outer hills of Garhwal on tropical zone upto 1800 m. in Garhwal zone.
Medicinal use: The infustion of the root is useful in anaemia and anti-malaria.

Oldenlandia coceinea Royle.
Habit: A small herb, stems slender. Flowers bright red, bright 1/4 in diam. axillary of terminal.
Fl. Aug. Sept.
Distribution: These plants are growing commonly on grassy slopes in throughout valleys upto 1800 m. elevation.
Medicinal use: The decoction of the plant is useful in remitent fevers with gastric irritation and nervous depression. The plant is also useful in Jaundice.

Oldenlandia corymbosa Linn.
Habit: An erect herb, stem slender or much branched, flowers white in small cyne in moist places.
Fl. Aug. Sept.

Pavetta tomentosa Roxb ex. Sm. (**Pavetta Indica** Linn.)
Vernacular Name: Papari.
Habit: A small tree, leaves obovate. Flowers white, fragrant.
Fl. June, July.
Distribution: It is found growing sporadic in tropical zone in outer Himalayas upto 1500 m. or revines slopes.
Medicinal use: The root is bitter, and useful in dropsy. The leaves boiled in water and fomentation made which is used in Haemorrhoidal pains.

Randia tetrasperma Roxb.
Vernacular name : Mendhu
Habit: A small glabrous rigid shrub, flowers solitary axillary and white tinged with green.
Fl. July, Aug.
Distribution: It is growing sporadic in outer Himalayas on dry rocks upto 1500 m. The plant is used in medicine.

Medicinal use: Locally the whole plant is used in medicine.

Rendia dumetorum Lamk.
S.N. Madana, *Vernacular Name:* Main Phal.
Habit: A large deciduous shrub on small tree. Flowers yellowish - white and fragrants, fruits yellow when ripe.
Fl. May, June. *Frt.* Sept. Oct.
Distribution: It is found growing commonly in tropical zone throughout the valleys upto 1600 m. in Garhwal region.
Medicinal use: The extract from root bark is an insecticidal. Fruit is useful in dysentery.The fruits are used as emetic and contain a saponin in the pericarp, and essential oil is also present.

Rubia cordifolia Linn.
S.N. Manjeestha, *Vernacular Name:* Lachkura.
Habit: A climbing herb, flowers small red.
Fl. June, July.
Distribution: It is found growing sporadic in shady slopes at Uttarakhand Garhwal from 1200 m. to 2100 m.
Medicinal use: Locally the root is used in menorrhogia and leprosy. The whole plant is useful in liver complaints, enlargement of spleen, ripe seed pulp is used for dye.

Wendlandia exserta DC.
Vernacular Name: Tilaka.
Habit: A small tree, young shoots grey tomentose. Flowers numerous, small gragrant white.
Fl. March, April.
Distribution: It is growing sporadic in tropical zone at outer Himalayas of Tehri Garhwal upto 1500 m.
Medicinal use: The bark is used as cooling and useful in ophthalmia.

CAPRIFOLIACEAE

Lonicera glauca Brong.
Habit: A small shrub with pinkish flowers.
Distribution: It is growing sporadic in alpine zone on moist slopes at Tehri Garhwal from 3600 m. to 4200 m.
Fl. June, July.
Medicinal use: The whole plant is used in Indian medicine as **Loniera Orientalis** Lamk.

Viburnum cotinifolium Don.
Vernacular Name: Goniya;
Habit: A shrub with young shoot leaves thick and ovate. Flowers white or tinged.
Fl. May, June.
Distribution: Found common in temperate region in Garhwal Himalaya 1500 m. to 2,400 m. elevation.

Note: Bark is collected for trade and sold in Dehradun market. **V. foetens** are also found in this region.

Viburnum nervosum Don.
S.N. Tilvaka, *Vernacular Name:* Tillen.
Habit: A large shrub, with stout grey or brownish branches. Leaves-parallel nerved, hairy on the nerves beneath. Flowers-white or pink in silky subcapitate cymes.
Fl. July, Aug.
Distribution: Common in sub-alpine and alpine zone through the valleys from 2,400 m. to 2,600 m. elevation.
Medicinal use: The bark is used in mennorrhogia and as purgative.

VALERIANACEAE

Nardostachys jatamansi DC.
S.N. Jetamansi, *Vernacular Name:* Mansi.
Habit: A perennial herb upto about 60 cm. tall rhizomes woody, long covered with aromatic fibres. Flowers small pinkish-white.
Fl. July, Aug.
Parts used: Rhizome (Root)
Distribution: Sporadic in alpine zone at Bhagirathi valley, Bhilangana valley, Her ki Dun, Kedarnath, Tungnath on rocks between 3,000 m. to 4,500 m. elevation.
Medicinal use: The dried rhizomes and roots of this plant are medicinal. Jatamansi is tonic, antispasmodic and stimulant, it is useful in treatment of certain types of fits, convulsions and palpitation of heart. Locally it is used to colour the oil for hairs.
Extent of Trade: Commercially small quantity of the roots are collected for sale in Dehradun, Delhi and Hardwar markets.

Valeriana jatamansi Jones. (Valerianna Wallichii DC.)
Sans. N. Tagara, *Vernacular Name:* Sumaya.
Habit: A pubscent herb. Flowers white, root aromatic and nodular.
Fl. April, May.
Distribution: Temperate zone in shady moist places of Uttarakhand Himalayas from 1,200 m. to 2,700 m. elevation.
Medicinal use: Local people use roots in the preparation of 'Ubatan' a cosmetic and hair oil. Roots are useful in diseases of eye, blood, livers and spleen, enlargement etc. They are also useful for clearing voice and as stimulant in advance stage of fevers.
Extent of trade: Commercially the whole plant is collected and consumed in Dehradun and Delhi markets.

Valeriana hardwichii Wall
Vernacular Name: Pind Tagar
Habit: A large herb, dichotamously branched corymbos and white flowers.
Fl. May, June.

Distribution: Sporadic in temperate zone in moist slopes at Uttara Khand Himalaya from 2,400 m. to 3,600 m.
Medicinal use: The properties are the same as of **V. Jatamansi** (Tagara).

DIPSACEAE

Morina longifolia Wall. ex. DC.
Vernacular Name: Biskandra
Habit: A tall spiney herb, stems 30 to 100 cm. high. Flowers pale purplish and aromatic.
Fl. July and Aug.
Distribution: Common in temperate zone on grassy slopes of throughout the valleys from 2,100 M. to 4,000 M. in Garhwal Himalayas.
Medicinal use: The roots are aromatic and locally used as poultice on boils. The plant, when flowering cause giddiness and dizziness to persons coming in contact.

ASTERACEAE (Compositae)

Ageratum conyzoides Linn.
Vernacular Name: Jangli Pudina
Habit: An annual weed, stem 30 to 100 cm. high. Flowers pale blue and aromatic.
Distribution: Common in tropical zone on roadside and warm low valley upto 1,500 m.
Fl. Dec. Jan.
Medicinal use: Locally the leaves are used for cuts and sores.

Anchillea millefolium Linn.
Vernacular Name: Unani-Brinjeshipa
Habit: An erect pubescent herb., stems leafy and grooved.. Flowers white or pale pink.
Fl. June, July.
Distribution: Sporadic in temperate zone in Uttarakhand Garhwal from 1,800 m. to 2,700 m. elevation.
Medicinal use: The plant is useful in Hysteria. Flowers stimulant and tonic for brain. Decoction of fresh leaves is regarded as specific against cold and other ailments common in childhood.

Adenostemma lavenia (Linn.) O. Kutze
Habit: An erect herb, 30 to 110 cm. high. Flowers tubular and white.
Distribution: Sporadic throughout the valleys on moist slopes upto 1,500 m.
Fl. May, June.
Medicinal use: Locally the leaves are used as antiseptic.

Artemisia maritima Linn.
S.N. Keetmari, *Vernacular Name:* Chhamriya.
Habit: An aromatic shrub, stems upto 3.1/2 ft. high, slender much branched, flowers heads homogamous numberous yellow green.

Fl. Sept. to Oct.
Distribution: Sporadic in Vasudhara, Badrinath, Mulari from 3,000 to 3,800 m.
Medicinal use: The santonin has been taken for anthelmintics and their uses by Chopra. The drug consists of the dried immature leaves and flowers head of plant. It has been recommended that the drug should be collected in early summer or late spring, by which time the flowers heads have not fully matured and properties of santonin is reported to be maximum just before the flowers began to open, it diminishes soon after. The chief use for the drug is for expulsion of worms from stomach.

Artemisia scoparia Waldst
Vernacular Name: Seeta-Bani
Habit: A glabrous herb, stems slender 30 to 60 cm. high, flowers white, tinged with green.
Fl. Aug.-Sept.
Distribution: Common in tropical zone and outer Himalayas of the Garhwal upto 1,500 m.
Medicinal use: Infusion of the plant is purgative and useful for ear troubles. The whole plant used as a cure for pain in the ear and the smoke is considered good for burns.

Artemisia sacrorum ledeb
Vernacular Name: Ganga-Tulsi.
Habit: An erect herb, 60 to 110 cm. high. leaves are aromatic, flowers, yellowish-green.
Fl. Aug, Sept.
Distribution: Sporadic in temperate zone at Uttarakhand Garhwal on rocks from 2,100 m. to 3,000 m. elevation.
Medicinal use: The whole plant given to horses in head infection. Locally the leaves are used as anthelmintic.

Artemsia nilagarica (Clarke) Pamp.
Vernacular Name: Kunja
Habit: A small shrub much branched 120 cm. high. Leaves aromatic and white.
Fl. July, Aug.
Distribution: Common in tropical and temperate zone of Garhwal from 600 m to 2,700 m.
Medicinal use: Leaves and flowers tips are useful in debility and asthma. They are antiseptic and anthelmintic and are given as decoction.

Aster thomsanii C.B. Clarke
Vernacular Name: Bhotia-Wagamik.
Habit: An hairy herb, stems bending at the joints. Flowers purple, achenes pubescent.
Fl. June, July.
Distribution: Found in temperate regions at Garhwal Himalayas between 2,100 M. to 3,000 M. elevation.
Medicinal use: Flowers are used in Tibetan system of medicine in Ladakh.
Note: Following species are found in Garhwal Himalayas between 3,000 M. to 4,000 M. elevation at Alaknanda valley, Dholighate, Neetipas and Sahasarutal.

1. **Aster tricephalus C.B. Clarke.**

An erect herb, Achenes, pubescent.

2. **A. diplostephioides** (DC) Clarke.
   An annual herb with blue flowers.
3. **A. himalicus** Cl. An erect annual herb.
4. **A asperulus** wall. An erect herb. Flowers purple.
   The above species are used in Tibetan system of medicine at Ladakh.

Ainsliaea aptera DC. (Karwebootee)
Habit: An erect herb, flowers white.
Distribution: Common in alpine and sub-alpine Himalayas between 2,100 M. to 3,800 M. elevation.
Medicinal use: Root antispasmodies, antipyretic and useful in abdominal pain.

Bidens internata (Lour) Merr.
Habit: An annual erect herb. Flowers yellowish-white.
Fl. June, July.
Distribution: Common in outer hills of Garhwal upto 1,500 m. of dry slopes.
Medicinal use: Leaves of the plant are useful for ulcers and smoken gland, the juice of squeezed leaves is put into the eye and ear for their complaints. Flowers are useful in diahrhoea. Locally the leaves are used internally to cure leprosy.

Centipeda minima (Linn.) A. Br.
S.N.-Chhikka.
Habit: A small weed, stems 8 to 15 cm. flowers yellow.
Fl. June, July.
Distribution: Sporadic on road side in tropical zone upto 900 m. elevation in Garhwal region.
Medicinal use: The powder of leaves and seeds induce sneezing and a snuff made from them is used for colds in the head.

Dichocephala latifolia DC.
Habit: A small herb, stems sometimes diffuse and branching from the base. Flowers white yellow.
Fl. July, Aug.
Distribution: common in temperate zone in Uttarakhand Garhwal upto 2,400 m.
Medicinal use: The decoction of the flower buds is sudorific and diuretic.

Eclipta alba Hassk.
S.N. Bhringraj, *Vernacular Name:* Bhagra.
Habit: A slender errect pubescent herb. Flowers white.
Fl. July, Sept.
Distribution: Common in throughout the valleys on roadside upto 1,500 m. elevation.
Medicinal use: The whole plant is tonic and used in enlargement of spleen. root emetic, purgative, applied externally as antiseptic, antisyphilitics.

Erigeron canadensis Linn.
Habit: An annual herb, stem erect 60 cm. high flowers white.
Distribution: Sporadic in temperate zone at Mussorie, Raithal, Ponwali upto 2,400 m. elevation.
Medicinal use: The plant is astringent and diuretic, useful in diarrhoea and dysentery.Oil from the plant is useful in intestinal haemorrhage.

Erigeron linifolius Willd.
Habit: An annual herb, stem erect 60 cm. high. Flowers white.
Fl. Aug.
Distribution: Sporadic in temperate zone at throughout the valleys upto 2,400 m. on moist slopes.
Medicinal use: The leaves are useful in rheumatism.

Gnaphalium lutealbum Linn.
Habit: An annual herb stem about 60 cm. Flowers yellow.
Fl. Dec. Jan.
Distribution: Common in dry places at outer Himalayas upto 2,100 m. in Garhwal regions.
Medicinal use: Leaves are astringent and antiseptic. The Tomentum of the leaf is applied as counter irritant in goat.

Galinsoga parviflora Cav.
Habit: An erect herb; stem weak 6 to 18 in hairy. flowers yellow.
Fl. Aug.
Distribution: Sporadic in temperate zone at throughout the valleys of Garhwal upto 2,400 m.
Medicinal use: The plant is useful against the stings, when rubbed on the body.

Gynura cusimbua (Don.) Moon.
Vernacular Name: Hempushpa.
Habit: An erect herb, stems 2 to 3 ft. high, flowers orange.
Fl. Aug. Sept.
Distribution: Common in temperate zone in Uttarakhand Garhwal on dry slopes upto 2,400 m. elevation.
Medicinal use: The whole plant is used as antiseptic. Local sadhu say that the juice of the plant is used in some "Gold preparations".

Gerbera lanuginosa Benth.
Vernacular Name: Kapasi.
Habit: A small herb, leaves spreading in base, flowers white red
Fl. April, Aug.
Distribution: Common throughout the valley on rockes upto 1,800 m. in Garhwal Himalayas.
Medicinal use: White cotton like coating on the under surface of the leaf is used as tinder and for staunching wounds.

Cirsium Wallichii DC.
Habit: An erect herb, leaves sessile.
Distribution: Common in alpine zones in Garhwal regions.

Local use: Whole plant is used as blood purifier.

Jurinea macrocephala Baiss.
S.N. Jatukand, *Vernacular Name:* Gagal.
Habit: An annual herb, leaves growing on base. Flowers violate.
Fl. Aug. Sept.
Distribution: Sporadic in grassy slopes at alpine zone Bhagirathi valley and Yamuna valley from 3,000m to 3,800m. elevation.
Note: **Jurinea himalica** R:Br is also found in this region.
Medicinal use: Decoction of root cordial, given in colic and puerperal of fever. Locally the roots are used as aromatic dhup. The rhizomes are explorated from the area.

Lactuea serriola Linn.
Habit: A glabrous herb, stem erect 60 to 150 cm. high. Flowers yellow.
Fl. July
Distribution: Sporadic in temperate zone at Uttarakhand Garhwal from 1,900 m. to 3,000 m.
Medicinal use: The fresh plant is mild sedative, diuretic and antispasmodic. It is useful in treatment of cough, bronchitis and asthma.
Note: The following species are found in Garhwal Himalayas between 2,700 m. to 4,000 m. elevation on alpine slopes.

1. **Lactuca lessertiana** (Wall.ex DC.) Clarke
   Herb, 30 cm, high, flowers yellow.
2. **L.macrorhiza** Hook f.
   A large herb, flowers pale-purple.
3. **L.sikkimensis** (Hook f.) Stebb
   A milky herb with purple flowers.

Saurrurea candicans C.B. C1.
Habit: A small herb, stem erect 60 cm. high. Flowers red-pale.
Distribution: Sporadic on slopes at Mussorie, Kanatal 2,400 m. elevation.
Medicinal use: Locally the seeds are used as a carminative.

Saussurea hypoluoca Sprent.
Vernacular name : Bhotia-Pangchi.
Habit: An erect herb, stem about 60 cm. high. Flowers pale-red.
Distribution: Temperate zone on moist slopes at Gangotri, Tepoban, Kedarnath and Herke dum from 2,400 m. to 3,600 m. elevation.
Medicinal use: The leaves are used as purgative in Indochina.It is also used in Tibetan medicine in Ladakh.

Saussurea obvallata Wall.
Vernacular Name: Brrhm kamal, Phenkamal.
Habit: A large herb with dark purple heads enclosed in the membranous bracts. Flowers very aromatic.
Fl. Sept. Oct.

Distribution: This plant is found growing sporadically in alpine zone at Kedar Nath, Chora Barital, Madhamewher, Gangotari,Herkee Dun between 3300 to 4000 m. altitude.
Medicinal use: Locally the roots are applied on cuts and bruises. The smell of the flowers cause giddiness. The flowers are offered in the prayers to God. It is also used in Tibetan medicine in Ladakh.

Saussaurea gossypiphora Don.
S.N. Bhed-gandha, *Vernacular Name:* Phinkamal.
Habit: A small cottony herb about 20 cm. high.
Fl. Sept, Oct.
Distribution: It is growing sporadically in alpine zones at the valley of flowers and Saharutal between 3800 to 4200 m.
Medicinal use: The whole plant is used locally in the preparation of medicine for Epilepsy and as stimulants.

Saussurea lappa C.B.CI.
Vernacular Name: Kootha, Koostha.
Habit: A tall herb with very large leaves. Flowers yellowish..
Fl. Aug, Sept.
Distribution: This plant is cultivated in Bhilagana valley, Bhagirathi valley at Gangi, Raithal between 2400 to 3600 m. elevation.
Medicinal use: This drug is antiseptic and disinfectant. It is useful in bronchitis, asthma, flatulence and certain cardic complaints. The drug is reported to be useful in skin diseases and rheumatism also.

Siegesbeckia orientalis Linn.
Vernacular Name: Lechkuri.
Habit: An erect herb, about 60 to 100 cm. high. Flowers greenish white.
Fl. Aug-Nov.
Distribution: This plant is growing commonly in moist habit at usually along road side in tropical zone throughout the valleys upto 1500 m. elevation.
Medicinal use: It is a cardiotonic and useful in healing sorses and in diseases of skin and the urethra. The leaves are effectively used on ringworm and as an antiseptic.

Sonchus oleracus Linn.
Vernacular Name: Chopalu.
Habit: A glabrous / glandular herb, 60 to 100 cm. high. Flowers yellow.
Fl. Sept-March.
Distribution: Common along fields throughout the valleys of the area upto 1800 m.
Medicinal use: Gum obtained by the evaporation of the latex is useful as cathartic and has powerful action on the liver.

Sonchus arvensis Linn.
Vernacular Name: Chopalu.
Habit: A globrous hairy herb, stems 60 to 110 cm. high. Leaves mostly radical and stem heads 1.2 in diam. Flowers-Yellow.

Fl. Sept.-March.
Distribution: It is found growing sporadically on the outer hills of the Garhwal area on moist slopes upto 2100 m. altitude.
Medicinal use: Locally the whole plant is useful in fevers and jaundice.

Sonchus asper Garsaults.
Habit: An erect annual herb, about 60 cm. high. Flowers yellow and latex yellow.
Fl. Aug-March.
Distribution: This plant is found growing commonly throughout the valleys along roadside upto 3000 m. altitude.
Medicinal use: The plant is useful as an application on the wound of boils.Leaves are used as an antiseptic.

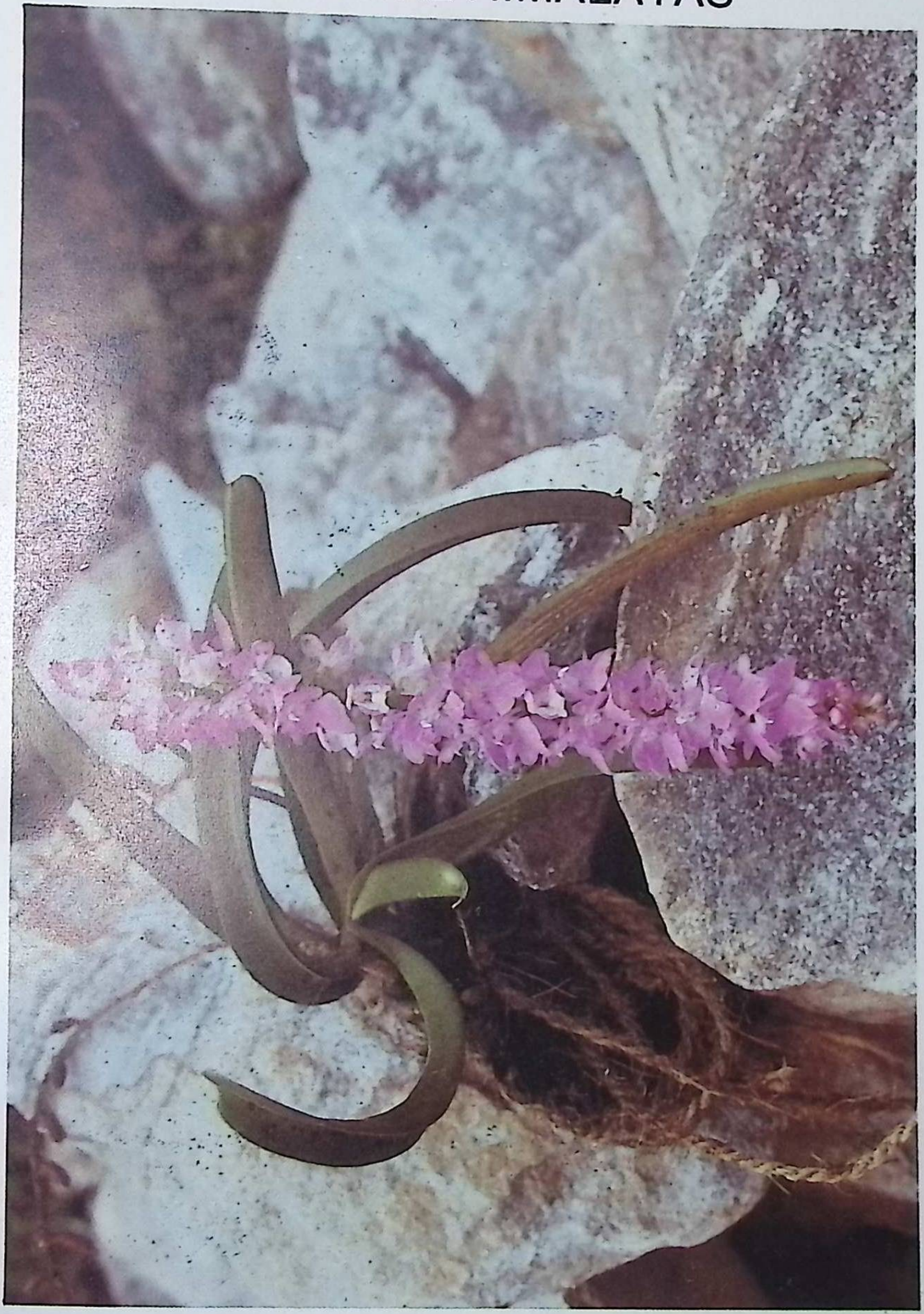
Solidago virg-aurea Linn.
*Habit:*An erect annual herb, 60 cm. high. Flowers purple-white.
Fl. March-May.
Distribution: This plant is found growing sporadically in outer Himalayan ranges extending to 2100 m. altitude.
Medicinal use: The flowers are diaphoratic carminative. The dried plant is useful in dysentery.

Senecio graciloflorus DC.
Habit: A glabrous herb ± 1/2 m. to 2 m. high. Flowers-Yellow.
Fl. May-June.
Distribution: It is growing sporadically in the temperate zones of the area between 2400 m. to 3600 m. **S.alatus** Wall. also found in this region.
Medicinal use: Locally the leaves are used in fever and abdominal pain.

Sphaeranthus indicus Linn.
Vernacular Name: Mundi, Mundika.
Habit: A much branched glandular hairy herb. Stems about 60 cm. high. Flowers pink or purple.
Fl. April-May.
Distribution: This plant is growing in the valleys of the tropical zones of the area usually in moist damp places and along cultivated fields upto 1200 m. altitude.
Medicinal use: This plant is used medicinally as an anthelmintic stomachic,alternative,aphrodisiac in the Indian system of Medicine. The herb contains 00.22 percent of an essential oil. It is also stated to contain a bitter alkaloid.

Taraxacum officinale Weber.
Vernacular Name: Dudhi, Dugdhipheni.
Habit: A perennial herb 8-10 cm. high. Juice milky. Leaves all radical and sessile. Flowers yellow.
Fl. March-Nov.
Distribution: This plant is found growing commonly in the temperate zones throughout the valleys extending from 2400 m. to 3600 m.
Medicinal use: The root is diuretic tonic and also used as a remedy for chronic disorders of kidney and liver. The leves are used for fomentation.

INTERESTING ORCHIDS OF GARHWAL HIMALAYAS



Rhynchestylls Sp. (Vanda)

Vernonia patula (Dyrand) Merril. (**Vernonia cinerea** Linn. Less).
Vernacular Name: Sahadevi.
Habit: An erect, pubescent annual herb, about 60 cm. high. flowers purplish.
Distribution: It is commonly found on roadside and in waste places throughout the area upto 1500 m. altitude.
Medicinal use: the root of the plant is anthelmintic and is given to horses. The decoction of the plant is used to promote repiration in feberile condition and as a remedy for spasm of bladder and stranguery.

Xanthium strumarium Linn.
Habit: A coarse, unarmed, annual herb or under shrub.
Distribution: Common throughout the hotter parts of the area upto 1500 m. altitude.
Medicinal use: The leaves of the plant yield a yellow dye. The plant is useful in malarial fever. The roots are cooling and are also given in small pox.

Vicoa indica DC.
Vernacular Name: Banjori
Habit: An erect herb. Flowers yellow.
Fl. Aug-Sept.
Distribution: Sporadic throughout the tropical zone upto 1200 m. altitude.
Medicinal use: Locally it is considered as anti-fertility drug.

ERICACEAE

Lyonia ovalifolia (Wall.) Drude
Vernacular Name: Ayar.
Habit: A deciduous tree. Flowers white in terminal and axillary recemes.
Fl. April-June
Distribution: It is growing commonly in the outer Himalayan ranges extending from 900 m. to 2400 m. altitude.
Medicinal use: The leaves and young buds are poisonous to goats and cattles. The young leaves are considered to have insecticidal properties and the smoke of the burning wood is said to cause inflammation to the eyes and the face. It is said to contain a toxic substance and remedotoxin.

Rhododendron arboreum Smith.
S.N. Kurubaka, *Vernacular Name:* Burans.
Habit: An evergreen tree. Flowers 2.5-3 cm. long red.
Fl. March-April.
Distribution: It is found growing commonly in temperate Himalayas from 1200 m. to 3000 m. altitude, throughout the valleys.
Medicinal use: The plant is poisonous and probably contain the glucoside ericolin. Locally the petals are eaten.

Rhododendron campanulatum D. Don.
Vernacular Name: Semuru, Atarasu.
Habit: An evergreen shrub. Flowers pale purple or whitish pink.

Distribution: Common in the alpine zone throughout the area extending from 2700 m. to 4200 m. altitude.
Medicinal use: The leaves of the plant mixed with tobacco are used in the preparation of indigenous medicines as a remedy for rheumatism and sciatica. It is also used as snuff against cold and hemicrania. Leaves are poisonous.

Rhododendron anthopogon D. Don.
Vernacular Name: Atarasu.
Habit: An aromatic shrub with creamy white flowers.
Fl. June.

Rhododendron lepidotum Wall ex. Don.
Vernacular Name: Atarasu.
Habit: An aromatic shrub. Flowers red, yellow or purple.
Fl. July-Aug.
Distribution: Common in the glacial belt throughout the valleys extending from 3000 m. to 4200 m. altitude in Garhwal Himalayas.
Medicinal use: Locally the leaves are used as an expectorant. The flowers are considered anesthetic. The aromatic leaves cause sneezing. Leaves are sold in the market as Talispatri.

PLUMBAGINACEAE

Plumbago Zeylanica Linn.
S.N. Chitraka. *Vernacular Name:* Lechkuro.
Habit: A spreading undershrub with rambling branches. Flowers white.
Fl. April-Sept.
Distribution: Sporadically distributed in out parts of the hills and open scrub forests upto 1500 m. altitude in Garhwal regions.
Medicinal use: The root of the plant is used in the indigenous system of medicine to improve digestion and promote appetite. It is also used in piles, anascara, diarrhoea and skin diseases. Milky juice is used as an application in scabies and unhealthy ulcers.. The roots contain Plumbagin, but it is absent in the leaves and stems.

PRIMULACEAE

Anagallis arvensis Linn.
Vernacular Name: Jonkmari.
Habit: An erect or procumbent herb. Flowers blue.
Fl. May-Oct.
Distribution: A common weed of cultivated fields throughout the area. It is also found in moist habitat of Garhwal region.
Medicinal use: This plant has been considered as a reputed medicine for gout, dropsy and as a remedy for snake bite.

Primula denticulata Smith
Habit: An erect herb, very variable in habit. Flowers white or pale purple.
Fl. March-April.
Distribution: It is found growing commonly in temperate zones throughout the valleys extending from 2000 m. to 4000 m.
Medicinal use: Locally this plant is considered poisonous and harmful to cattle. It is also used in Tibetan Medicine in Ladakh.

MYRSINACEAE

Maesa indica (Roxb) Wall.
Habit: A large shrub. Flowers white, small, in compound racemes bracts minute.
Fl. Dec.-April.
Distribution: It is common in the Sub Himalayan tracts of Garhwal, distributed at Mussoorie, Ukhimath upto 1800m. altitude.
Medicinal use: Locally, the decoction of the root is used in sypillis. The fruit is anthelmintic.

Myrsine africana Linn.
Habit: A small erect evergreen shrub. Flowers small green.
Fl. March-May. *Frt.* Feb.-May.
Distribution: It is common in the outer hills of the Tehri Garhwal extending from 900 m. to 2000m. altitude.
Medicinal use: The plant is useful in gout, leprosy and cerebral affections.

Symplocos chinensis (Lour) Durce.
S.N. Lodhara, *Vernacular Name:* Lodha.
Habit: A large shrub or a small tree. Leaves ovate, acute, turning yellow on drying. Flowers white fragrant.
Fl. April-June. *Frt.* Oct.-Dec.
Distribution: Sporadically distributed in the oak forest throughout the area extending from 1200 to 2400 m. altitude.
Medicinal use: Locally the bark is used in menstrual disorders. Bark powder is also applied medicinally on face. The leaves are astringent, and useful in diarrhoea.

EBENACEAE

Diospyros montana Roxb.
Vernacular Name: Tendu
Habit: A small or middle sized tree. Flowers dark green.
Fl. April-May.
Distribution: Sporadically distributed on the lowers slopes and ravines of the area extending upto 900m. altitude.
Medicinal use: The fruits are poisonous and are used externally for piles.

SAPOTACEAE

Madhuca longifolia (Keoning) Mac Bride. (**Madhuca indica** Gmel.)
S.N. Madhuca, *Vernacular Name:* Mahua.
Habit: A long deciduous tree, bark greyish, flowers cream coloured, petals fleshy, caducous.
Fl. April
Distribution: Sporadically distributed on the lower slopes of the outer hills (tropical zone) ascending upto 900m. a.s.1 at Dehradun, Munikerate.
Medicinal use: The flower astrigent, tonic, and appetising and are used in the preparation of the indigenous medicines. The bark is also astrigent and a tonic.

OLEACEAE

Jasminum revolutum. (**Jasminum humile** Linn. Sims)
Vernacular Name: Pitmalti.
Habit: An erect glabrous shrub. Flowers yellow and fragrant.
Fl. May-June. *Frt.* Sept-Nov.
Distribution: Sporadically distributed in the tropical zones of the area extending from 600m. to 200m. altitude.
Medicinal use: The flowers are astrigent and a heart tonic. The roots are useful in ringworms.

Jasminum grandiflorum Linn.
Habit: A woody climbing shrub. Leaves and young stem dark green. Flowers white or tingle with purple, sweet scented.
Fl. July onwards.
Distribution: Sporadic in the tropical zones of the area extending upto 1800 m. altitude.
Medicinal use: Fresh juice of the leaves is applied to soften the corn between the toe fingers etc. The leaves are useful in ulceration and eruption of mucous membrane of mouth and also tooth ache. Flowers yield an oil, useful in skin diseases.

Jasminum officinale Linn.
S.N. Jatee
Habit: A sub climbing shrub. Flowers white, leaves opposite.
Fl. May- June.
Distribution: Sporadic in the outer hills of the area extending upto 2000m. in temperate regions.
Medicinal use: The flowers are useful in the diseases of heart. The roots are effective in ringworms.

Nyctanthes arbor-tristis Linn.
S.N. Parijata, *Vernacular Name:* Kuri.
Habit: A rough, shrub or small tree. Flowers fragrant and white.
Fl. - Aug - Oct.
Distribution: Common in the tropical zones throughout the valleys upto 1500m. in temperate regions.

Medicinal use: The leaves are useful in fever and rheumatism, fresh juice is given with honey in chronic fevers.

Olea cuspidate Wall. ex Dc.
Vernacular Name: Bair
Habit: A medium size tree, branched and inflorescence scaly.
Flowers white axillary.
Fl. April - May.
Distribution: It is growing sporadically, cultivated in Dun valley extending upto 1800m. altitude.
Medicinal use: The oil from the fruit is rubifacient, useful in rheumatism and lumbago. Leaves are astringent and are useful in fever, Fruit is used in liver complaints and tooth ache.
Note: **Olea gladulifera** Wall is also found in sub Himalayan regions.

Osmanthus fragrans Lour
S.N. Basuka, *Vernacular Name:* Shilangi.
Habit: A small tree with grey bark. Flowers white fragrant.
Fl. March-May
Distribution: It is found growing sporadically in the outer range at Gupta-Kashi, Ukhimath ranging from 1500 to 1800m. altitude.
Medicinal use: Locally the bark is used in toothache. The flower is used as a scent in hair oils etc.

Syringa emodi Wall ex. D.Don.
Habit: A large shrub. Flowers white, fragrant.
Distribution: It is common in the temperate zones throughout the area of usually in the ravines upto 2700m altitude.
Medicinal use: Locally the flowers are used for scenting the hair oils and the seeds are used as astringent.

APOCYNACEAE

Alstonia scholaris R.Br.
S.N. Saptaparana, *Vernacular Name:* Chhatan.
Habit: A tall evergreen tree with grey bark. Flowers greenish white.
Fl. Dec. Jan.
Distribution: Sporadic in the outer hills throughout the valleys upto 1500m. altitude in Garhwal regions.
Medicinal use: This drug is considered very efficacious in chronic diarrhoea and dysentery. It is useful in malarial fever and bring down the temperature. Bark of the tree is a tonic and useful in skin diseases.

Carissa opaca Stapf.
Vernacular Name: Karaunda.
Habit: A small thorny evergreen shrub. Flowers white scented, fruit green to dark purple when ripe.

Fl. April- June.
Distribution: Abundantly found in the outer hills of the area upto 1200m. altitude in Garhwal regions.
Medicinal use: The roots are purgative. Flowers are very much scented. Locally the ripe sweet fruits are eaten.

Holarrhena antidysenterica (Linn) Wall
*S.N.*Kutja, *Vernacular Name:* Kuda.
Habit: A tall shrub or a small tree latex milky white. Flowers white fragrant, fruits linear slender, 20-45 cm. long.
Fl. April - June.
Distribution: It is found growing sporadically in the tropical zone of the area on the foot hill upto 1200m altitude in Garhwal
region.
Medicinal use: The bark is digestive, antidysenteric and an excellent remedy for diarrhoea. The seeds are also effective in diarrhoea fevers, jaundice and stone in bladder. The alkaloid conessine present in the bark has been found to retard the growth of tubercular bacillii. Seeds also contain alkaloids which are effective in dysentery.

Ichnocarpus frutescens Br.
Vernacular Name: Dudhi
Habit: A twining shrub. Flowers greenish white.
Fl. Feb. - March.
Distribution: commonly in the tropical zones throughout the valleys upto 1200 m altitude in Garhwal regions.
Medicinal use: The root is often used as a substitute for sarssaparrilla and blood purifier.

Trachelospermum lucidum (D.Don) K.Schum.
(Trachelospermum fragrans Hook.f.)
Habit: A tall climber. Flowers white fragrant in terminal or axillary cymes.
Fl. April - June.
Distribution: It is found growing at Jaunsar and Tehri Garhwal areas usually on moist shady ravines upto 1800m. altitude.
Medicinal use: The roots are used as a substitute for sarsaparilla.

Vallaris solanacea (Roth) Oktze.
Vernacular Name: Dudhi.
Habit: A twining shrub. Flowers white, attractive.
Fl. Dec - April.
Distribution: Common in the tropical zones of the area on dry slopes upto 1500m altitude.
Medicinal use: The milky juice of the plant is irritant and applied on old wounds and ulcers. Locally it is collected as sariva and sold in the local market.

Wrightia tomentosa Roem & Schult.
Vernacular Name: Meetha Kuda.

Habit: A small tree with smooth yellowish grey, bark white to pale yellow flowers.
Fl. Dec. Jan.
Distribution: Common in the foot hills and open valleys in North Garhwal and Tehri Garhwal area upto 1200m. altitude.
Medicinal use: Locally the bark of the stem and root is useful in menstrual and renal complaints. Seeds are used as Meetha-indrayva.

ASCLEPTADACEAE

Asclepias curassavica Linn.
S.N. Kaktundi,
Habit: An erect or under shrub herb, 60-100cm. high. Flowers angered.
Fl. Jan. - Dec.
Distribution: This plant is growing sporadically on ravines throughout the valleys upto 1500m altitude in Garhwal regions.
Medicinal use: The root and the juice are emetic and cathartic. Juice of the root contains the glucoside "asclepiadin". The roots also contain vincatoxin which closely resembles emetine in the physiological action.

Calotropis procera R.Br.
Sans. N. - Araka, *Vernacular Name:* Akha.
Habit: A shrub about 1 1/2 high. Flowers white-purple.
Fl. Oct. Jan.
Distribution: It is growing sporadically throughout the valleys in exposed dry places upto 1000m altitude.
Medicinal use: The milky juice contains a protiolytic enzyme and a toxic substance. It also contain a highly active resin. The root bark contains a bitter yellow resin, but not alkaloid. It is useful in Kasa and Asthma.

Cryptolepis Buchanii Roem. & Schult.
S.N. Krishna- Sariva, Dudhi,
Habit: A large climbing shrub with milky juice. Flowers pale white.
Fl. May, July.
Distribution: Common on the foot hills of the area upto 1200m altitude.
Medicinal use: The plant is used for curing rickets of children. It is also given to ladies for more lactation.

Hoya longifolia Wall.
Habit: A glabrous shrub, stem slender and climbing, flowers axillary, red.
Fl. July, Aug.
Distribution: It is growing sporadically throughout the area on moist shades upto 2100m. altitude in Garhwal region.
Medicinal use: The whole plant is used in the preparation of indigenous medicines as blood purifier.

Marsdenia Roylei Wt.
S.N. Moorva, *Vernacular Name:* Mariabel.
Habit: A twining, softly tomentose shrub. Flowers orange red, in umbellate cymes.
Fl. May, July.
Distribution: Sporadically distributed on the slopes of the foot hills upto 2100m. altitude.
Medicinal use: Locally the unripe fruit is powdered and given as cooling medicine. Decoction of the plant is useful as a remedy in gonorrhoea.

Marsdenia tenacissima Wt. & Arn.
S.N. Marua, *Vernacular Name:* Maruabel.
Habit: A large twining shrub. Flowers orange.
Fl. April - May.
Distribution: Sporadic in tropical zones on the foot hills upto 900m. altitude in Garhwal regions.
Medicinal use: The root is locally used as a purgative and the decoction is given in gonorrhoea. The dried roots are sold in the local market as 'Trivit'.

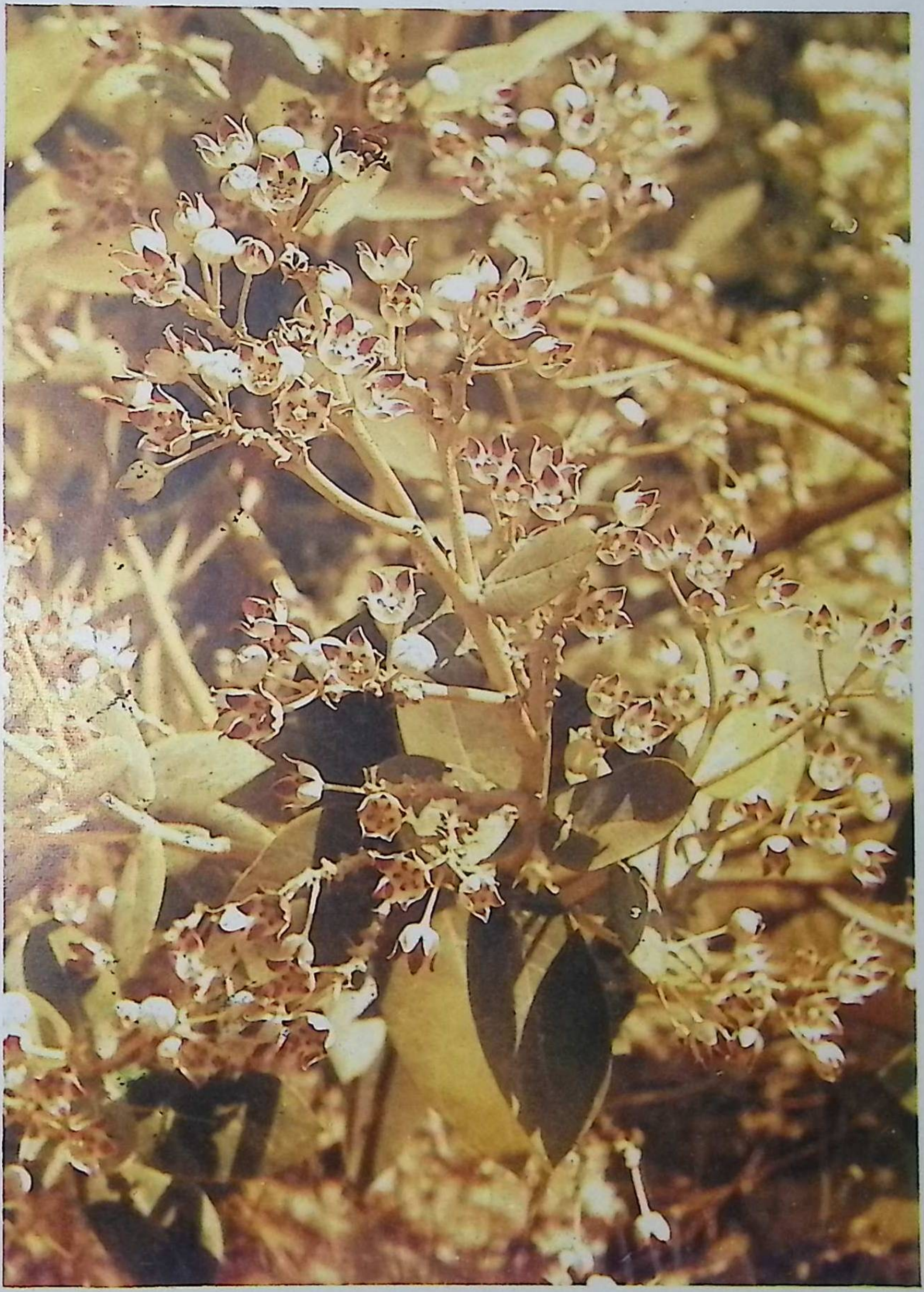
Pergularia daemia (Forsk) Chiov.
Habit: A hairy climber. Flowers yelowish-green.
Fl. April - June.
Distribution: It is found growing sporadically in the tropical zones on the outer hills upto 2000m. altitude.
Medicinal use: The plant is emetic and expectorant, juice of leaves are useful in catarrhal infections, infantile diarrhoea and asthma. Fresh leaves made into a pulp are used as poultic in carbuncle.

Periploca calophylla Falc.
Habit: A glabrous shrub with slender branches. Flowers pinkish or pale yellow.
Fl. Dec - Jan.
Distribution: It is growing sporadically on the foot hills shady ravines upto 1800m. altitude.
Medicinal use: Locally the roots are used in fevers and as blood purifier.

Dregea volubilic (Linn.F) Benth Hook F. (Marsdenia Volubiltis (Linn. F) Benth) (Watta kaka Volubilis (L) Stapf).
Habit: A twining shrub. Flowers dark green.
Fl. April - June.
Distribution: It is growing sporadically on the foot hills of Mussoorie and often in area upto 1600m. altitude in Garhwal regions.
Medicinal use: The plant is useful in cold and eye diseases. Root is used as an expectorant.

GENTIANCEAE

Exacum tetragonum Roxb.
Habit: An erect herb. Flowers blue.
Fl. Sept. - Oct.



Calotropis procera. R. Br(Arka)

Distribution: It is growing sporadically on the foot hills of Mussoorie, Chamba, Tehri Garhwal etc. upto 1500m. altitude.
Medicinal use: Locally the whole plant is used in fever and in ulcers.

Gentiana Kurroo Royle.
S.N. Triymana.
Habit: A small perennial herb, about 10-30 cm. high. Flowers blue with white spots.
Fl. Sept. - Oct.
Distribution: Sporadic in sub-alpine and alpine zones, growing on rock habitats ranging between 2400m. to 3600m.
Medicinal use: The whole plant is a bitter tonic. The roots are used in fevers, blood purifier and are useful in abdominal pains.
Note: The following species are found in Garhwal Himalayas between 2700m. to 4000m. elevation.

1. **Gentiana argentea** (Royle) DC. Herb 2-5 cm. high.
2. **G.capitata** Buch-Ham., Herb 30 cm. high Fl. Blue.
3. **G.Pedunculata** Royle ex.G.Don.- Herbs 6-10 cm. high. Fl.-blue.
4. **G.Tenella** (Rottb) H. Smith, small herb. Flowers purple.

These species are used as Tibetan medicine in Ladakh.

Swertia alata Royle ex D.Don.
Habit: An erect herb, 60 cm. high. Flowers yellowish green.
Fl. July - Aug.
Distribution: It is growing sporadic in temperate zones 2700m. to 3300m. Whole plant is used in medicines for fever.

Swertia angustifolia Buch. Ham. ex D.Don.
Habit: An erect herb, +- 30 - 100 cm high. Flowers white or pale blue.
Fl. July-Sept.
Distribution: It is growing commonly in temperate zones upto 2100m. altitude.
Local use: Whole palnt is used as fabrifuge and blood purifier.

Swertia Chirate Ham. ex Wall.
*S.N.*Kirat, *Vernacular Name:* Chiraitu.
Habit: An ercet herb stem well branched robust, 60 cm. to 1 1/2m. high. Flowers greenish yellow, tinged with purple.
Fl. July - Sept.

Swertia cordata Wall ex Clarke.
Habit: An erect herb, stem 30-1 m. high, well branched. Flowers yellowish white.
Fl. June - Aug.
Distribution: Sporadic in Uttarakhand Garhwal region between 2700 to 3000m. The whole plant is used as a bitter tonic.

Swertia purpurascens Wall.ex Clarke
Habit: An erect herb, stems 30 cm. 1 m. high, branches spreading. Flowers pale - red to purple.
Distribution: Sporadic in moist grassy slopes throughout the valleys ranging from 1000m to 3000m. altitude.
Medicinal use: The whole plant is used as a bitter tonic, laxative, fabrifuge and it is also useful in fever. This species are used as a substitute for **Swertia chirata** Buch. Ham. as blood purifier.
Note: **Halenia elliptica** D.Don. is also used in Tibetan medicine.

BORAGINACEAE

Cordia dichotoma Frost F.
Habit: A medium sized tree. Flowers white fruits ovoid.
Fl. April - May.
Distribution: Sporadically distributed on the foot hills upto 1200m. altitude in Garhwal region.
Medicinal use: The fruit is astringent. The bark is useful in fevers and dyspepsia.

Cynoglossum Wallichii G. Don.
Habit: An erect herb, 60 cm. high. Flowers blue.
Fl. June - July.
Distribution: Sporadic in temperate zones of Garhwal Himalayas between 900 to 2400m. altitude.

Cynoglosum micranthum Desf.
Habit: A small erect herb, stems and leaves rough. Flowers pale blue or white.
Fl. July - Sept.
Distribution: Common on the foot hills of the temperate regions extending 2400m. altitude in Garhwal Himalayas.
Medicinal use: Locally the whole plant is used for checking vomiting in infants.

Heliotropium strigosum Willd.
Habit: A small perennial herb. Flowers pale blue or white.
Fl. July. Frt. July onwards.
Distribution: It is growing sporadically on the hotter parts of the Garhwal area upto 900m. altitude.
Medicinal use: The plant is diuretic and is also useful in sore.

Anebia bethamii (Wall ex G.Don) I.M.John.
(= Macrotomia Benthami Dc.)
Vernacular Name: Lalajari, Ratanjot.
Habit: An erect herb about 600 cm. high. Flowers bluish muff root red.
Fl. July - Aug.
Distribution: Common growing among grasses. It has been recorded from Dayara, Tali, Herkee Dun, Between 3000m. to 4000m. elevation.
Medicinal use: The whole plant is useful in the diseases of tongue and throat ulcers. Locally the roots are used on cuts and wounds for healing the wounds.

Onosma emodi Wall.
Vernacular Name: Lajari, Ratanjot.
Habit: A small hairy herb. Flowers purple and muff.
Fl. June - July.
Distribution: It is growing sporadically in the temperate zones at Kedar Nath, Manapas between 3000 to 3800m. elevation.
Medicinal use: Locally the paste of the roots are applied on cuts and wounds. It is useful for dye and colouring agents.

Onosma echioides Gaertn.
Vernacular Name: Ratanjot.
Habit: An erect herb, stem hairy and branched. Flowers purple muff.
Fl. July - Aug.
Distribution: Rare,found near Bhairo Ghati (Tehri Garhwal), Alkananda valley, Dhodi Ghatie and Kedar Nath, Madmaheshwar, 3000 to 4000m.
Medicinal use: Locally the roots are applied on cuts and wounds, and used as dye. It is used in Tibetan system of medicine.

Trichodesma indicum R.Br.
*S.N.*Adhapushpi.
Habit: An annual spreading herb. Flowers pale blue turning to pink.
Fl. Dec. - Jan.
Distribution: It is found growing in tropical zone of the Garhwal region on grassy slopes upto 1200m. altitude.
Medicinal use: The whole plant is diuretic. The roots are pounded and made into a paste and are applied to reduce swelling of the joints.

CONVOLVULACEAE

Cuscuta reflexa Roxb.
Vernacular Name: Akasbel.
Habit: An annual prasitic twining herb, stem yellowish. Flowers whitish or creamy.
Fl. July - Oct.
Distribution: Common in the tropical zones of the area,throughout. growing on the foot hills upto 2100m. altitude.
Medicinal use: The decoction of the stem is useful in constipation,liver complaints and Vat roga.

Convulvulus arvensis Linn.
Habit: A twining perennial herb, flowers purple with yellow or pale yellow centre.
Fl. Jan - May.
Distribution: Sporacdically distributed on the foot hills in the tropical zones of the Garhwal area upto 1000m. altitude.
Medicinal use: The roots are purgative and cathartic, but it is considered poisonous due to marked gastointestinal irritation.

Evolvulus alsinoides Linn.
Vernacular Name: Shnkhahuli.
Habit: A softy hairy, perennial herb. Flowers small blue or white and forming in terminal racemes.
Fl. March - Oct.
Distribution: It is found growing sporacdically along the fields of tropical zone upto 1500m. altitude.
Medicinal use: The plant is a remedy for dysentry, locally the whole plant is used in bronchitis, asthma and brain tonic.

Ipomoea hederacea (Linn) Jacq.
Vernacular Name: Kaladana.
Habit: A twining herb. Flowers large pale blue sporadic
Fl. Aug - sept.

Ipomoea eriocarpa R.Br.
Habit: A twining hairy herb. Flower pink.
Fl. Aug - Sept.
Distibution: This plant is common on the foot hills on moist slopes upto 1200m. altitude in Garhwal region.
Medicinal use: The seeds are carminative and useful in the disease of liver and spleen. It has purgative properties. Locally the whole plant boiled in oils is used to cure headache, leprosy and ulcers.

SOLANACEAE

Datura stramonium Linn.
Vernacular Name: Kala dhatura.
Habit: An erect annual herb or under shrub 60 cm. 1-1/2 m high. Flowers - white.
Fl. April - May.
Distribution: Common on the foot hills of the area on dry slopes upto 1800m. altitude in Garhwal Himalaya.
Medicinal use: The leaves of the plant after roasting are applied locally for releiving haedache and pain etc. Inhalation of smoke from burning leaves is useful in asthma. Seeds are narcotic, young fruits are sedative and intoxicating.

Datura metal Linn.
S.N. Dhastoora, *Vernacular Name:* Dhatura.
Habit: An erect annual herb or under shrub +- 1 1/2 high. Flowers whitish purple, capsule nodding, dehiscing irregularly covered with fubercles.
Fl. May - July.
Distribution: common in tropical zone along road sides and waste places upto 1000m. in Garhwal region.
Medicinal use: The whole plant is used as an antiseptic, narcotic, sedative and is useful in asthma.

Hyoscyamus niger Linn.
Vernacular Name: Bisajain, Parshik-yavani.
Habit: An erect annual or biennial bad smelling hairy herb. Flowers pale green, fruit globose.
Fl. Aug - Sept.
Distribution: The plant is growing sporadically at Badrinath, Bhagirathi valley, Yammuna valley, and Harkidun between 2700m. to 3,800m. altitude.
Medicinal use: The dried leaves and flowering branches collected soon after the flowering constitute the drug. It is used for releiving painful spasmodic conditions of muscles and in nervous irritation as in hysteria, cough etc. It is also used in Tibetan system of medicines.

Nicandra physaloides (Linn) Gaertn.
Habit: An erect annual glabrous herb, 15 cm. to 95 cm. high. Flowers blue, usually.
Fl. June: July.
Distribution: This plant is common on the temperate zone growing in waste places upto 2100m. altitude in Garhwal region.

Nicotiana tabacum Linn.
Vernacular Name: Tambaku, Tamarkut.
Habit: An erect annual herb, flowers yellow
Fl - Aug - Sept.
Distribution: Cultivated in Garhwal regions upto 2100m. altitude
Medicinal use: Locally the seeds are used as a cure for toothache.

Physalis angulata Linn.
Habit: An erect annual pubescent 30 cm. -1 m. high.
Flowers yellow or blue.
Fl. July-Nov.
Distribution: It is growing sporadically throughout the valleys in waste places and road side upto 2000m. altutude.
Medicinal use: The fruit are diuretic. The juice of the leaves mixed with oil is put into the ear for releaving earache.

Solanum indicum Linn.
S.N. Birhatie, *Vernacular Name:* Bhtkataya.
Habit: A spiny shrub, flowers blue, fruit globose, berries smooth, light green with dark green stripes.
Fl. May- Oct.
Distribution: It is growing sporadically in the tropical zones of the area upto 1000m. altitude.
Medicinal use: The whole plant is used as a carminative, expectorant used in asthma, cough and fever.

Solanum Khasiaum Clarke.
Habit: A hirsut branched herb. Flowers white and berries yellow when ripe.
Fl. May, June. *Frt.* Nov. -Dec.
Distribution: Common but distributed in patched throughout the valleys upto 1800 m. altitude in

Garhwal region.
Medicinal use: Locally the matured berries are used in jaundice, and the whole plant extract is considered expectorant. Locally it is consumed in the preparation of "Chayavanprash".

Solanum surattense Burm. F.
*S.N.*Kantakare
Habit : A very prickly diffuse perennial herb. Flowers bluish purple berries yellow when ripe.
Fl. May- Oct.
Distribution: Common in tropical zone along road side usually in dry exposed places upto 1000m. altitude in Garhwal region.
Medicinal use: The whole plant is used as an expectorant, carmi- native and used in asthma, bronchitis, dropsy etc.

Solanum nigrum Linn.
S.N. Kakamachi, *Vernacular Name:* Makoi.
Habit: An erect annual herb. Flowers white, berries greenish to blackish or red when ripe.
Fl. June- Oct.
Distribution: Common in tropical zone in shady places on the fool hills upto 1800 m. altitude.
Medicinal use: The whole plant is useful in diarrhoea and fever. The juice of the plant is effective in treatment of enlarged liver.
Note: **Solanum torvum** Sw. **S. melongena** Linn. are also found in Garhwal regions. Locally collected for trade.

Withania somnifera Dunal.
S.N. & Vernacular Name : Ashwagandha.
Habit: An erect branching under shrub upto 120 cm. high. Flowers greenish yellow, berries red when ripe.
F1. - Dec.- March.
Distribution: Frequent in tropical zone along road side at Tehri, Dharasu, upto 1200m. altitude.
Medicinal use: The root is used as aphrodisiacs tonic, diuretic and is also used in rheumatism and in to crease sexual design and power.

SCROPHULARIACEAE

Bacopa monnieri (Linn) Pennell.
S.N. Brahmi.
Habit: A semiaquatic, spreading herb. Flowers blue.
Fl. Dec.-March.
Distribution: Sporadic in the troical zone in moist ravine along streams etc. upto an altitude of 900m. in Garhwal region.
Medicinal use: Locally the whole plant is used as a brain-tonic, laxative, and blood purifier.

Digitalis lanata Ehrh.
Vernacular Name: Hritapatari.
Habit: A biennial or perennial herb upto 60 cm. high. Flowers white or purple.

Fl. June- July.
Distribution: Cultivated in Raithal at 2100m. altitude usually in open area in Bhagirathi valley.

Medicinal use: The leaves are used as cardiac stimulant. the plant has bitter medicinal properties than other species.

Kickia ramosiassima (Wall) Janchen.
Habit: A perennial herb, stem about 75 cm. - 100 cm. high. Flowers yellow.
Distribution: Sporadic in temperate zones of the area growing usually on walls etc. near water courses.
Medicinal use: The whole plant is used as a remedy for diabetes and alteratives.

Lindenbergia indica (Linn.) Vatka.
Habit: A glandular hairy herb, 10-30cm. long. Flowers yellow.
Fl. June - July.
Distribution: It is found sporadically distributed throughout the valleys upto 1800m. altitude. Often growing along Streams: some times on walls in Garhwal region.
Medicinal use: Juice of the plant is useful in chronic bronchitis and skin erruptions.

Picrorhiza kurroa Benth.
S.N Kutki, *Vernacular Name:* Karu.
Habit: A spreading herb with perennial root stock, leaves turn black on drying. Flowers light blue with long filaments.
Fl. June- July.
Distribution: It is common around glacial rocky beds on sub-alpine and alpine slopes at Kedar Nath, Herker Dun, Ponwali, Tali, Harsil etc. extending from 3000m. to 4000m. altitude of Garhwal Himalayas.
Medicinal use: Locally the powdered root-stock is used in abdominal pains. It is also regarded good laxative. It is useful in Jaundice, anaemia and other liver complaints.
Parts used: Root, Stem, time of collection: Aug- Oct.
Extent of Trade: Good quantity is collected and sold in Dehradun, Hardwar and Delhi markets.

Sopubia delphinfolia G.Don.
Habit: An elegant small erect herb, + 60 cm. high. Flowers rose coloured.
Distribution: Sporadic in the Northern parts of the area upto 1800m. altitude.
Medicinal use: The whole plant is useful in the diseases of the eye and it is also used internally in the treatment of jaundice.

Striga asiatica (Lour.) O.Ktze.
Habit: An erect rough annual 75 cm. high. Flowers pale yellow.
Fl. Aug. *Frt.* Aug.onwards.
Distribution: It is growing sporadically in shady slopes of the foot hills upto 2000m.
Medicinal use: The whole plant is usful in disease of blood.

Veronica anagallis Linn.
Habit: An erect herb, 60 cm to 1 m.high. Flowers yellow.
*Fl.*July.
Distribution: It is growing sporadically at Mussorie on moist slopes upto 1800m. altitude.

Medicinal use: The whole plant is useful in skin diseases.

Verbascum thapsus Linn.
Vernacular Name: Gidar- tamaku.
Habit: An erect herb, 60 cm. 1m. high flowers yellow.
Fl. July.
Distribution: It is common on the foot hills of the area, growing in waste places upto 2400m. altitude.
Medicinal use: The leaves are useful in chest complaints. The dried leaves are smoked for checking cough and asthma.
Note : **Pedicularis longiflora** and **Pedicularis bifida** also found in This region.

GESNERACEAE

Didymocarpus pedicellata Br.
L.N.Pathar phori
Habit: A small stemless herb. Leaves radical, roundly ovate. Flower purple.
Fl. Aug.
Distribution: It is growing sporadically in the tropical region of the area upto 1800m. altitude.
Medicinal use: The leaves are used as a cure for stone in kidney and bladder.

BIGNONIACEAE

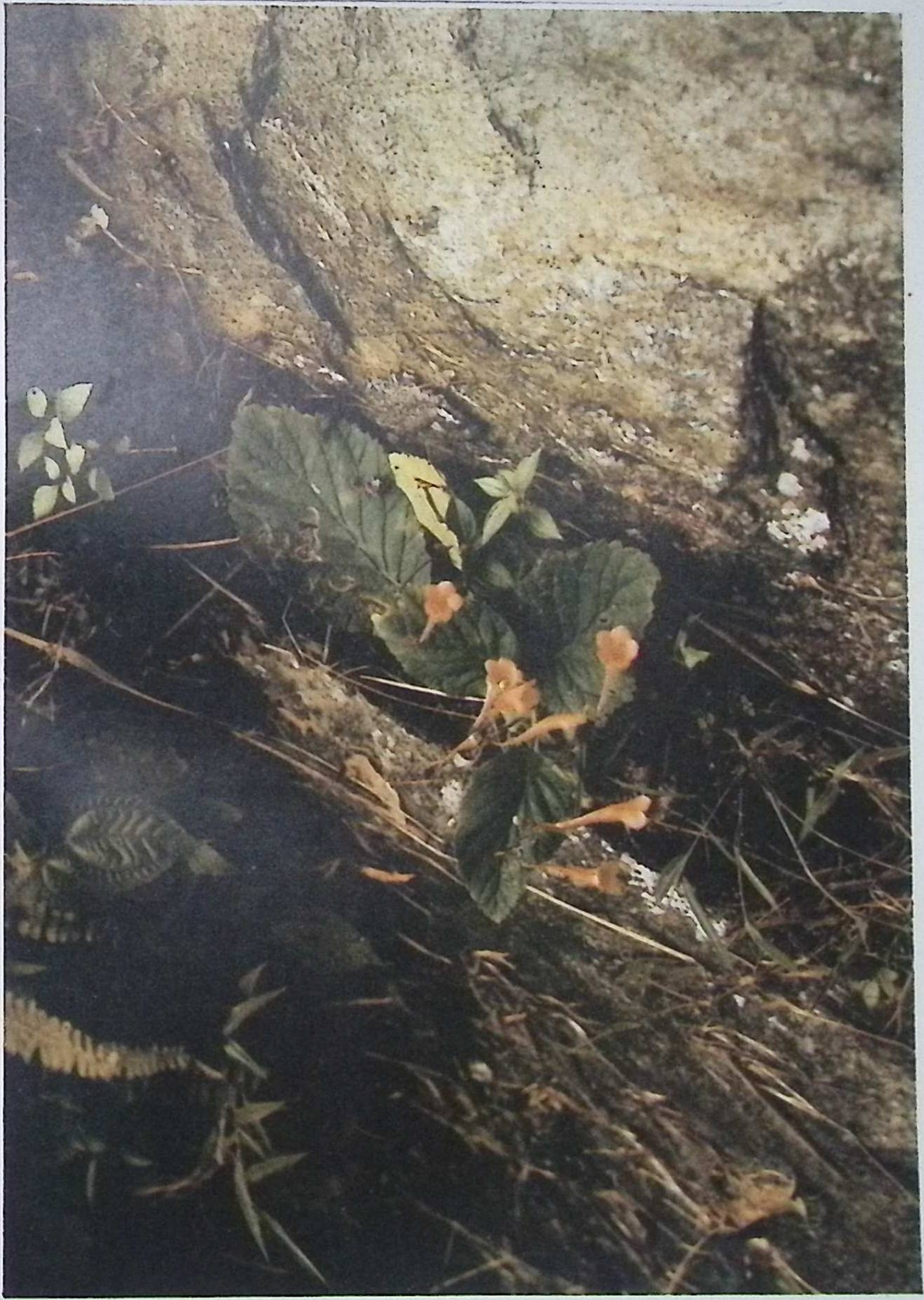
Amphicome emodi Lindl.
Habit: A perennial herb, stems 60 cm. - 100 cm. high.
Flowers - tinged yellow.
Fl. July, Aug.
Distribution: Sporadic in the temperate zones of the area growing on rocks upto 2400m. altitude.
Medicinal use: The whole plant is considered as a subsitute for chirayata (**Swertia chirata**)to cure fever and used as blood purifier.

Oroxylum indicum (Linn.) Vent.
S.N. - Syonaka, *Vernacular Name:* Arlu.
Habit: A small deciduous tree. Flowers white - purple; capsule 30 cm. to 100 cm., flat and straight.
Fl. Jan., March.
Distribution: Sporadic in tropical zones throughout the valley upto 1200m. on dry exposed slopes.
Medicinal use: The root bark is useful in diarrhoea dysentery and rheumatism. Seeds are purgative. Locally it is used as a "Dashmula". It is also used as anthelmintic, anti-arthritic, carminative and diuretic.

ACANTACEAE

Adhatoda vasica Nees.
S.N. - Vasaka, *Vernacular Name:* Basingu, Basa.
Habit: An evergreen gregarious shrub. Flowers axillary, white with pinkish tinge.
Fl. Dec. April.

Medicinal Plants of Garhwal Himalayas



Didymocarpus Sp. (Patharphori) Page No. 80

Distribution: It is abundantly found in sub- Himalayan tracts throughout the valleys upto 1200m. altitude of Garhwal regions.
Medicinal use: The whole plant is insecticide and is used in cough, chronic bronchitis and asthma. Flowers roots and leaves are useful in pulmonary affections.

Barleria dichotoma Roxb. (Barleria cristata Linn)
Habit: An erect hairy, perennial herb, stem 60 cm. 1 m. high. Flowers pink: purplish. Capsule oblong.
Fl. Nov. *Frt.* Dec. Jan.
Distribution: It is growing sporadically in the hotter parts of the area upto 1500m. altitude in sub Himalaya tract.
Medicinal use: The plant is useful in fever, bronchitis and blood diseases.

Barleria prionitis Linn.
Habit: A spinous under shrub. Flowers terminal, spikes yellow, capsule 2 seeded.
Fl. Aug., Sept.
Distribution: It is found growing sporadically on the foot hills usually on exposed, rocky slopes upto 1000m. altitude in foot hills of Garhwal region.
Medicinal use: The juice of the plant is useful in catarrhal affections in children, decoction of the plant is useful in bronchitis and cough.

Peristrophe biealyculata (Retz.) Nees.
S.N. - Kakajangha,
Habit: An erect herb, 60 - 100 cm. high. Flowers pale blue.
Fl. July. Aug.
Distribution: It is growing commonly in tropical zones on the foot hills upto 1000m. altitude in Garhwal regions.
Medicinal use: The whole plant is useful in fever and also used against snake-venom.

Strobilanthes auriculatus Nees
Habit: An erect shrub, with branched stems. Flowers dark blue.
Fl. Sept.
Distribution: It is growing sporadically on the foot hills of the area upto 1200m. altitude.
Medicinal use: The whole plant is useful in fever,, antiemetics.

Rostellularia procumbens (Linn.) Ness
Habit: A procumbent herb, rooting at the nodes. Flowers pinkish purple, seldon white.
Fl. Sept. Dec.
Distribution: It is growing sporadically in the sub-tropical zone, growing moist slopy areas upto 1200m. altitude.
Medicinal use: The whole plant is useful in fever, bronchitis. and in blood diseases.

VERBENACEAE

Callicarpa Macrophylla Vahl
*S.N.*Priyangu, *Vernacular Name:* Dahiya.
Habit: A gregarious well branched herb densely tomentose. Flowers purple and fruits, aromatic.

Fl. July - Nov.
Distibution: Commonly in ravines throughout the area upto 2000m. altitude, growing in moist shady habitat, in Grahwal regions.
Medicinal use: The bark is aromatic and is used in cutaneous affections. Oil extracted from the root is applied on joints to relieve rheumatic pains. Locally the juice of the fruit is used in stomachic and swellings of the gums etc. The seeds are used in various indigenous preparation of medicines.

Clerodendrum indicum (Linn.) Ktze.
Vernacular Name: Chingari.
Habit: A deciduous shrub upto 4m. high. Flowers white tinged with red.
Fl. Jan. - March.
Distribution: Common on foot hills, growing in moist shady slopes upto 1200m. altitude in Garhwal regions.
Medicinal use: The root bark is useful in Asthma, cough and scroflous affections. Leaves are vermifuge and aunthelmintic.

Clerodendrum serratum (Linn.) Moon.
S.N. - Bharangi.
Habit: A small well branched shrub, 1 - 1 1/2m. high. Flowers blue, fruit black when ripe.
Fl. May - April.
Distribution: It is growing sporadically throughout the valleys along road sides at Ghonti, Ghansali, Guptu-Kashi etc. usually extending upto 1200m. altitude of Garhwal regions.
Medicinal use: Locally the decoction of the whole plant is used in bronchitis and also as an expectorant.

Gmelina arborea Linn.
S.N. Ghabhari,
Habit: A deciduous tree. Flowers brownish yellow. Fruits smooth, orange-yellow, when ripe.
Fl. March - April.
Distribution: It is sporadically distributed on the foot hills upto 900m. altitude in tropical zone of Garhwal regions.
Medicinal use: The bark is used in the preparation of indigenous medicines. The juice of the tender leaves is useful in cough and against worms. It is used as fabrifuge, laxative, refrigerant stomachic and tonic. Wood is used for artificial - limbs.

Lantana camara Linn.
Habit: A rough branched shrub. Flowers variously coloured.
Fl. July - Dec.
Distribution: An exotic shrub quite naturalized in the country. Sporadically distributed in the tropical zone upto 1000m. altitude in throughout the Garhwal regions.
Medicinal use: The whole plant is diaphoretic and carminative. Decoction of the plant in useful in rheumatism, and Malaria.

Verbena officinalis Linn.
Habit: An perennial herb, 60 cm. to 100 cm. high. Flowers liliac.

Distribution: It is growing sporadically in the temperate zones of the area extending upto 2000m. altitude.
Medicinal use: The leaves are febrifuge and used as burbifacient in rheumatism, also useful in early stages of fever and cold etc.

Vitex negundo Linn.
Vernacular Name: Shimalu, Nirgundi.
Habit: A gregaious shrub, 1-3m. high. Flowers bluish purple. Seeds black when ripe. Fruit succelent, ovoid containing four seeded nutlets.
Fl. July - Aug.
Distribution: Common in tropical zone growing along road side along cultivated fields upto 1000m. altitude in throughout the Garhwal regions.
Medicinal use: Leaves are useful in headache , catarrhal fever. Juice has the property of removing foetid discharge and worms from ulcers.

Premna barbatata Wall.
S.N. Araribhed, *Vernacular Name:* Baker.
Habit: A small tree with grey bark. Flowers whitish green.
Fl. May - June.
Distribution: Common on the foot hills throughout the valleys upto 1500m. altitude in Garhwal regions.
Medicinal use: The bark is used in the preparation of Indian System of medicine and also in fever. It is used as carminative, expectorant, stomachic, and tonic. It is also useful in liver complaints.

Premna latifolia Roxb.
Vernacular Name: Bakaru.
Habit: A small tree. Flowers yellowish- green,fruits aromatic black to red when ripe.
Distribution: Commonly on the foot hills on exposed slopes upto 900m. altitude in Garhwal regions.
Medicinal use: The bark is medicinally used.

Pygmaeopremna herbacea (Roxb.) Moldenke.
Habit: A small perennial shrub with woody roots stocks. Flowers greenish white.
Distribution: It is growing sporadically in the tropical zone on dry exposed slopes upto 900m. altitude in Garhwal regions.
Medicinal use: The whole plant is used in fever, anti-pyretic and antispamodic.

LABIATAE (Nom. alt. Lamiaceae)

Ajuga bracteosa Wall. ex Benth.
Habit: A small herb, stem erect or ascending in the branching from the base. Flowers pale blue.
Fl. May - June.
Distribution: Common in the temperate zone on moist slopes extending upto 2100m. altitude.
Medicinal use: The root bark is anthelmintic and useful in fever and skin diseases. It is also

useful in painful joints and in antisyphilitic.

Anisomeles indica (L.) Ktze.
Habit: A small erect herb, about 60 cm. high. Flowers white.
Fl. June - July.
Distribution: It is growing sporadically in the temperate zone of Bhilagana valley, Bhatwari and Kanatal ranging from 1200m to 2100m. altitude in Garhwal regions.
Medicinal use: The whole plant is astrigent and carminative. It is also useful in painful joints.

Elsholtzia strobilfera Benth.
Habit: An erect herb, leaves stalked, ovate, crentae, flowers-pale - purple.
Fl. July-Aug.
Distribution: Found sporadic in temperate regions thoughout the valleys of Garhwal Himalayas from 1600m. to 3000m. elevation.
Medicinal use: The leaves are the source of an essential oil. The Whole plant is used in Tibetan medicine in Ladakh.
Note: Following species are found in Garhwal Himalayas between 1,500m. to 3,600m. elevation.

1. **Elsholtzia fruticosa** (D.Don) Rehder
   (**E.polystachya Benth.**) - A pubescent shrub. Flowers-white or pale-yellow.
2. **E.cristata** Willd Aromatic herb, Flowers-white.
3. **E.incisa** Benth. Aromatic herb with light purple flower.

Colebrookea oppositifolia Smith
Vernacular Name: Binda.
Habit: An erect tomentose shrub, 120 cm. to 3m. high. Flowers white aromatic.
Fl. Jan. - Feb.
Distribution: Frequent in the lower valleys of the area upto 1200m. altitude.
Medicinal use: The roots are useful in epilepsy. Leaves are applied on wounds and bruises.

Clinopodim vulgare Linn.
(Calamintha clinopdium Benth.)
Habit: A small erect herb; leaves aromatic. Flowers greenish-white.
Fl. July-Sept.
Distribution: It is growing sporadically in the temperate zone, on slopes extending from 1500m. to 3300m. altitude in Garhwal regions. **C umbrosum C. Koch** is also found in this regions.
Medicinal use: The Whole plant is astringent and carminative. The plant contains an oil used in purfumery.

Lamium album-petiolatum Linn.
Habit: A decumbent or ascending, perennial herb 15-35 cm. high; root-stocks trailing. Flowers pale pink.
Fl. & Frt. May-June.
Distribution: Sporadic in the temperate zone thoughout the valley on moist solpes extending upto 3000m. altitude.
Medicinal use: The seeds are used as a substitute for ' Isabgol'(**Plantago evata**) in dysentry. The

Leaves are cooling and antidote to cattles. Juice of the plant has a curative effect in tubercular consumption with spitting of blood.
Note: **Lamium album** L. is also found in temperate regions of Garhwal Himalayas.

Leucas cephalotes Spreng.
S.N. Dronpushpi, *Vernacular Name:* Guma.
Habit: An erect annual herb 30-50 cm. high. Flowers white.
Fl. July-Oct.
Distribution: Common in tropical zone on the lower foot hills of the area upto 1200m. altitude near cultivated fields.
Medicinal use: The whole plant is stimulant and insecticide.
Flowers are used as a remedy for cough and cold.

Mentha longifolia (Linn.) Hudson (**Mentha sylvestris** Linn.)
Vernacular Name: Poundina.
Habit: A perennial herb with aromatic leaves. Flowers white. *Fl.* July - Oct.
Distribution: Common in and along streams in the ravines throughout the area upto 2800m. altitude.
Medicinal use: The whole plant is useful in bronchitis, diarrhoea and dysentery. Locally the leaves are used as a carminative.

Meriandra strobilifera Benth.
Habit: An erect, tomentose shrub 60 cm. 1-3/4 high. Flowers-small white.
Fl. July - Aug.
Distribution: Sporadically distributed on dry rocks upto 1800m. altitude in Garhwal regions.
Medicinal use: Decoction of the plant is useful for healing of ulcers and skin aberasions.

Nepeta elliptica Royle ex Benth.
Habit: An annual, erect herb, Flowers purplish.
Distribution: Frequently distributed in the alpine zone at Herkeeldun, Bhagirathi valley, Bhilagana valley from 2700m. to 3000m. altitude.
Medicinal use: Locally infusion of the seeds are carminative and are useful in dysentry, and in uterine disorders.

Nepeta hindustana (Roth) Haines.
Habit: An erect herb, 60 cm. high. Flowers purplish.
Distribution: Sporadic on the foot hills on moist slopes upto 1500m. altitude in Garhwal Himalayas.
Medicinal use: The whole plant is useful in fevers and as a cardiac tonic. Decoction is used in sore throats. Leaves and flowering tops are used medicinally as carminative, refrigerant and stimulant.
Note: The following species are found in Garhwal Himalayas between 2,100m. to 3,600m. elevation.

1. **Nepeta connata** Royle ex Benth. A tall herb with tuberous root stock.
2. **N. leucophylla** Benth. - An erect tomentose herb.
3. **N. discolor** Royle Erect herb. F1. Blue.

4. **N. govaniana Benth.** Erect aromatic herb. The above species are used in Tibetan system of medicine.

Origanum vulgare Linn.
Habit: A perennial erect herb, 30-120 cm. high. Flowers pink.
Fl. Aug. - Nov.
Distribution: Common in tropical zone, growing on the foot hills upto 1000m. altitude.
Medicinal use: The whole plant contains a volatile oil, which is useful in rheumatism and toothache.

Prunella frutescens (Linn.) Brett.
Habit: An erect, aromatic, hairy herb 60 cm. 1-1/2m. high.
Flowers small, white.
Fl. April - Oct.
Distribution: sporadically distributed on the foot hills upto 1500m. altitude, in Garhwal Himalayas.
Medicinal use: Leaves, stem and seeds are considered resolvent, diaphoretic and carminative.

Prunella vulgaris Linn.
Habit: An erect or ascending, hairy herb 10-30 cm. long. Flowers purple, bell-shaped.
Fl. March - Oct.
Distribution: Common in temperate zone, throughout the valleys, growing on moist slopes upto 2400m. altitude, in Garhwal regions.
Medicinal use: The whole plant is useful in fever, cough, asthma and diarrhoea, infusion is used as a mouth wash and anti-septic .

Pogostemon parviflorus Benth.
Habit: An aromatic shrub. Flowers white tinged-pink.
Fl. July- Aug.
Distribution: It is growing sporadically on the outer hills of the area, usually on dry exposed slopes upto 1500m. altitude in Garhwal regions.
Medicinal use: Locally, th fresh leaves are used to clean wounds and to promote healthy granulation.

Roylea calycina (Roxb.) Briq.
Vernacular Name: Karu.
Habit: A small shrub, stems branched, leaves bitter. Flowers white, tinged with pink.
Fl. March-April.
Distribution: Sporadically distributed in the tropical zone on the foot hills upto 1500m. altitude.
Medicinal use: Locally the decoction of leaves is given in
fever and cardiac stimulant.

Salvia lanata Roxb.
Habit: An erect woody herb. Flowers blue.
Fl. April - Aug.
Distribution: Sporadically distributed in the temperate zone on grassy slopes between 1200 to 2400m. altitude.

Medicinal use: The roots are useful in cold and cough. Seeds are emetic, useful in dysentry.

Salvia plebeia R.Br.
Vernacular Name: Kamrkash.
Habit: A pubescent under shrub. Flowers white and small.
Fl. March - May
Distribution: Sporadic in the tropical zone throughout the valleys upto 1200m. altitude in Garhwal regions.
Medicinal use: The seeds are used as general tonic and antispasmodic.

Thymus serpyllum Linn. SSp. **quinquecostatus** (Kitamara)
S.N. Banyayabani
Habit: An aromatic under shrub. Flowers purple pink.
Fl. April - Sept.
Distribution: Commonly in the temperate zone thoughout the valleys on slopes extending from 2200m. to 3000m. altitude.
Medicinal use: The whole plant is useful in liver and stomach diseases. Leaves are used in the purification of blood and are laxative. Infusion is useful in whooping-coughs.

PLANTAGINACEAE

Plantago major Linn.
Habit: A perennial, erect herb, leaves broadly ovate, stalked. Flowers green.
Fl. April-Oct.
Distribution: Common throughout the valleys growing on moist slopes. It is recorded at Bhilangana and Bhagirathi valleys and at Herkeedun between 2800 to 3300m. altitude.
Medicinal use: The seeds can be used as a substitute for Plantago ovata in dysentry. It is also used in Tibetan system of medicine.

NYCTAGINACEAE

Boerhaavia diffusa Linn.
S.N. Punarnava, *Vernacular Name:* Purnu.
Habit : A very deep rooted perennial spreading herb. Flowers pink.
Fl. Jan. - Dec.
Distribution: Common in tropical zone on the foot hills of Garhwal, along road sides etc. upto 900m. altitude.
Medicinal use: Locally the roots are useful in asthma, jaundice and intestinal inflammation. It is also used for setting bones.
Tender shoots are eaten as pot herbroot powdermixed with manura is used in eye diseases. Plant juice is used as an antidote to rat-poisoning.

AMARANTHACEAE

Achyranthes aspera Linn.
Vernacular Name: Ultokure, *S.N.* Apamargh.
Habit: An erect herb or undershrub. Flowers green or tinged with purple.
Fl. May-Oct.
Distribution: A common weed growing usually in dry area and along road side upto 1000m. in Garhwal regions.
Medicinal use: The whole plant is useful in dropsy, boils and erruptions of skin. The decoction is useful in renal dropsies.
Locally the roots are useful in toothache.

Achyranthes bidentata Bl.
Habit: A spreading herb. Flowers scarious.
Distribution: It is growing sporadically in the temperate zone at Ganganani 1800m. altitude in Garhwal regions.
Medicinal use: The whole plant is used as a diuretic and astringent. It has got similar properties as given in **A.aspera.**

Aerva sanguinolenta (Linn.) Blume (Aerva scandens Wall)
Habit: A tomentose herb. Flowers silvery white.
Distribution: Common in open dry forest and west places in Garhwal region upto 1200m.

Amaranthus gracilis Desf.
Vernacular Name: Chuolae.
Habit: An erect herb, 60 cm. high. Flowers green.
F1. July-Sept.
Distribution: Sporadically distributed on the outer hills between 1000 to 1800m. altitude, growing in waste lands or along road side.
Medicinal use: The tender shoots are eaten as vegetable. It is emollient in action.

Amaranthus tricolor Linn. (Amaranthus gangeticus Linn)
Habit: An erect or diffuse herb reaching 1 m. high. leaves variable. Flowers green in dense axillary clusters or inspikes.
Fl. July- Sept.
Distribution: Sporadic on outer hills of the area such as Bhatwari(1800m)etc., growing in wastelands or sometimes cultivated as vegetable.
Local use: Locally the whole plant is used medicinally.

Amaranthus spinoous Linn.
Vernacular Name: Kanta- choulae.
Habit: An erect or diffuse, annual prickly shrub. Flowers greenish in defuse.
Fl. Aug. - Sept.
Distribution: Common in the hotter parts of the area upto 900m. altitude, growing in wasteland and along cultivated fields.
Medicinal use: Locally the roots are useful in colic troubles and diuretics. The leaves are eaten as

Dendrobium (Jeevanti)

vegetable. It is also useful in Leucorrhoea.

Amaranthus hybridus Linn. Ssp. eruentus (L) Thell. Var. paniculatus (L)
(=Amaranthus painculatus Linn.)
Vernacular Name: Marchha.
Habit: An erect stout annual herb, reching 1m. high. Flowers in penicled spikes, reddish.

Fl. Nov.
Distribution: commonly cultivated in the area upto 2400m. altitude in Garhwal Himalayas.
Medicinal use: The leaves are eaten as vegetable. The seeds are used as food. The plant is useful as a blood purifier and in piles.
Note: Large quantity is collected in the area.

Celosia argentea Linn.
Habit: A tall erect annual herb. Spikes terminal pinkish white. Seeds black shining.
Distribution: A common weed of rice fields growing upto 1200m. altitude in Garhwal regions.
Medicinal use: Locally the seeds are useful in the diseases of blood and mouth-sores.

Deeringia amaranthoides (Lamk)Merr.
Habit: A climbing undershrub. Flowers pale yellow and greenish.
Fl. July - Oct.
Distribution: Sporadic in tropical zone growing on outer hills of the area upto 1500m. altitude.
Local use : The leaves are applied on sores. Fruit can be used as red ink.

CHENOPOSIACEAE

Chenopodium ambrosoides Linn.
Vernacular Name: Sugandha- vastooka.
Habit: An erect aromatic herb, stems 60cm. -120cm. high.
Fl. Nov. - Feb.
Distribution: Common in tropical zone throughout the valleys of the area upto 900m. altitude in Garhwal regions.
Medicinal use: Like preceding species the whole plant is anthelmintic, particularly effective in the expulsion of Hook worms.It is used in piles also.

Chenopodium botrys Linn.
Habit: An erect aromatic, pubescent herb. Flowers green.
Fl. May- Oct.
Distribution: Sporadic in the temperate zones of the area upto 3000m. altitude.
Medicinal use: The whole plant is anthemintic and is used in piles.

Chenopodium album Linn.
S. N. Vastuoka, Bathua.
Habit: Common in Garhwal regions in waste places upto 2,100m.
Local use: Its leaves and tenders twigs are used as vegetable and fodder.

POLYGONACEAE

Fagopyrum esculentum Moench.
Vernacular Name: Ogal, Kotu.
Habit: An erect glabrous annual herb. Leaves triangular. Nut ovate, angled, Flowers white.
Fl. Aug.-Sept.
Distribution: A cultivated herb common throughout the area upto 2400m. It is a native of Eurasia. Exact locality is not known.
Medicinal use: The seeds and leaves are used in the preparation of medicines locally. The grains are used as food, leaves used as vegetable.

Fagopyrum tataricum Gaertn.
Vernacular Name: Phapara.
Habit: An erect perennial herb. Flowers white.
Fl. July-Aug.
Distribution: Sporadic in temperate zone throughout the area upto 2800m. altitude in Garhwal Himalayas.
Medicinal use: The grains are used as food, leaves used as vegetable.

Oxycaria digyna Hill.
Habit: A small herb with green flowers.
Distribution: It is growing sporadically on outer part of the hills in Garhwal region on dry forest.
Medicinal use: The whole plant is used as a cooling agent and diuretic.

Polygonum amplexicaule D.Don.
Vernacular Name: Amil.
Habit: It is growing sporadically in the temperate zone throughout the valleys upto 2400m. to 3300m. altitude in Garhwal regions.
Medicinal use: Locally the roots are used in medicine.

Polygonum aviculare Linn.
Vernacular name : Hisonali
Habit: An erect herb, stem and branches prostate. Flowers white.
Fl. June-July.
Distribution: Common in temperate zone on moist slopes throughout the valleys between 1800m. to 3000m. altitude.
Medicinal use: Locally the root is used as a blood purifier. Dried roots are used externally as anodyne.

Polygonum chinense Linn.
Habit: An erect shrub, stem 1-2m. high. Flowers white or pink.
Fl. July-Aug.
Distribution: It is growing sporadically in the temperate zone throughout the valleys upto 2400m. altitude in Garhwal Himalayas.
Medicinal use: The roots are used as anitscorbitic, laxatives and useful in liver diseases.

Polygonum recumbens Royle ex. Bals.
Habit: A spreading prostraks herb with greenish white flowers.
Fl. June-July.
Distribution: Common throughout upto 2800m. altitude.
Medicinal use: Locally the whole plant is used as blood purifier.

Polygonum rumicifolium Royle ex Bab.
Vernacular Name: Kantalu, Nirbishi.
Habit: An erect herb, 60-100 cm. high. Flowers white or pink.
Fl. June-Aug.
Distribution: Sporadic in temperate zone at Kedar Nath, Tunga nath, Medhmehwar usually growing on glocial beds between 3300. to 3900m. altitude in Garhwal Himalayas.
Medicinal use: Locally the root stock is used as antidote to aconite poisons. The root powder is used as mouth wash.

Polygonum viviparum Linn.
Habit: A perennial herb, 60-100 cm. high. Flowers pink.
Fl. June-July.
Distribution: Sporadic in temperate zone throughout the valleys of the area upto 2400m. altitude in Garhwal regions.
Medicinal use: The roots are astringent useful in leucorrhoea. Locally the root is given in intermitent fever and as blood purifier.

Rheum emodi Wall.
Vernacular Name: Archa, *Unani Name*-Revanchini.
Habit: An erect rhizomatous herb, 60-100 cm. high. Flowers pinkish white.
Fl. June-July.
Distribution: Common in temperate zone throughout the valleys at Chora Barital, Tali, Ponwali, Gangotri, Herkeedun, Kedar Nath, Between 3000 to 4200m. altitude in Garhwal Himalayas.
Medicinal use: Locally the rhizome is used on cuts and wounds.. The root powder is used as purgative. Rhizome is commercially collected and sold in Dehradun markets. It is used in Tibetan system of medicine.

Rheum moorcroftianum Royle.
Vernacular Name: Dholu.
Habit: An erect with large leaves. Flowers red, small.
Fl. June-July.
Distribution: Sporadic in alpine zones at Kedar Nath, Hathani, Tung Nath, Badrinath between 3300m. to 4000m. altitude in Garhwal Himalayas.
Medicinal use: The root is used in the same way as that of **Rheum emodi**. Locally root is also used as colouring agent. **R.Webbianum** Royle are also found in this region.

Rumex acetosa Linn.
Habit: A perennial herb. Flowers pink-white.
Fl. June-July.

Distribution: Sporadically distriduted in the alpine zone on moist slopes throughout between 3600 to 4000m. altitude in Garhwal Himalayas.
Medicinal use: The leaves are diuretic. It is also used as cooling agent in febrile diseases. Locally the leaves are used as vegetable.

Rumex hustatus D.Don.
Vernacular Name: Bhimelda.
Habit: A branched herb. Flowers red white.
Fl. May-Dec.
Distribution: Frequently distributed on outer hills of the area upto 2100m. altitude.
Medicinal use: Locally the leaves are eaten as vegetables.

Rumex nepalensis Spreing
Habit: An erect robust herb. Flowers greenish-red.
Fl. April.
Distribution: Sporadically distributed in temperate zone upto 3000m. altitude in Garhwal regions.
Medicinal use: The whole plant is in the preparation of Indian Medicines.

PIPERACEAE

Piper longum Linn.
S.N.-Pippali,
Habit: An creeping herb. Flowers in spikes
Fl. Dec. Jan.
Distribution: Sporadically distributed at Ghonti, Pilkhi, Powa in shady ravines upto 1000m. altitude in tropical zone.
Medicinal use: The dried unripe fruits are useful in diarrheoa, chronic bronchitis, cough and cold. Locally the fruits are used as carminative and tonic, and contains an essential oil, starch, resin, gum, fat and piperine.

Piper brachystachyum Wall.
Habit: A creeping herb with greenish spikes
Fl. may-July.
Distribution: Sporadically distributed in Ukhinath, Ghonti etc. between 900 to 1500m. altitude in tropical zone on moist placed.
Medicinal use: The dried unripe fruits are useful in Diarrhoea, chronic bronchitis, cough and cold. Locally the fruit are used as carminative and tonic. Roots are used as piplamul.

LAURACEAE

Cinnamomum tamala Nees & Eberm
S.N. Taja-Patra, *Vernacular Name:* Khikhelu.
Habit: A small tree. leaves three-nerved. Flowers yellow-white fruits black when ripe.

Fl. May. *Frt*. June-July

Litsaea Umbrosa Ness.
Vernacular Name: Shunur.
Habit: A moderate size to large sized evergreen tree, fruit globose or oblong.
Fl. March, May.
Distribution: Sporadic on the foot hills of Saunasar, Tehri, Garhwal, Phata upto 1800m. altitude. The fruit oil is used in skin diseases.
Medicinal use: Locally the bark is used in medicine, carminative, anti-periodic and appetiser.

Machilus odoratissima Nees
Habit: A small tree; leaves alternate. Flowers white and fragrant.
Distribution: It is growing sporadically on the foot hills throughout the valleys of the area upto 2100m. altitude.
Medicinal use: The leaves are used as expectorant. The bark is useful in medicine as appetiser.

PIDALIACEAE

Martynia annua Linn.
S.N. Kakanasha.
Habit: A annual herb. Fl. Pinkish white, common in outer part of Garhwal region. It is naturalized in India.

THYMELAEACEAE

Daphne papyracea Wall. Exstered. Emend, Smith et. Cav.
Habit: An erect evergreen glabrous shrub 1 2 to 2m. high Flowers white.
Distribution: Common at Jaunsar, Kanatal, Ghuttu etc. ranging from 1200m. to 2100m. altitude.
Medicinal use: The whole plant is bitter and purgative. In Nepal and Kumaon paper is made out of the inner fibrous bark.

ELAEAGNACEAE

Elaeagnus umbellata Thunb. Var **parisflora**(Royle) Schneider.
Vernacular Name: Ginori.
Habit: A throny deciduous shrub. Flowers dull-white.
Distribution: Sporadically distributed on the foot hills between 900 to 2100m. altitude.
Medicinal use: The seeds are used as an stimulant in cough. The flowers are used in pulmonary infections.

Hippophae rhamnoides Serve Haz. ssp. **salicifolra** (D.Don).
Serrvettaz (**H.Salicifolra**, D.Don)

Vernacular Name: Ameel.
Habit: A thorny shrub. Flowers red; fruit yellow when ripe.
Fl. April-May. Frt. Oct. March.
Distribution: Common in ravines and along roadside at Bhagirathi valley, Hanumanchatie, Ram bara, between 2100m to 3300m. altitude in Garhwal Himalayas.
Medicinal use: Locally the fruits are used as a sauce. The plant is useful in pulmonary complaints. Antitumour activity is also found in the bark. This plant is used for against cancer.

LORANTHACEAE

Dendropthoe falcata (Linn.f.) Etting.
Habit: A woody parasite. Flowers scarlet tipped with green.
Fl. November -June.
Distribution: It is usually found growing on **Quercus incana.** Sporadically distributed in outer Himalayan ranges upto 1800m. altitude in Garhwal regions.
Medicinal use: The bark is narcotic and useful for wounds and also in menstrual troubles. It is also a remedy for asthma.

Viscum album Linn.
Vernacular Name: Chuluka-Banda.
Habit: An erect , large parasite shrub, branches terete, jointed. Flowers small green. Berries translucent.
Fl. March-May. *Frt.* November-January.
Distribution: It is usually growing on **Junglans regia** trees and found in the foot hills of Garhwal regions upto 2000m. altitude.
Medicinal use: The plant is useful in the enlargement of spleen tumours etc. Berris are laxative, diuretic and carditonic.

Viscum nepalense Spreng.
Habit: A green parasitic leafless shrub. Branches flat, jointed, grooved. Flowers green..
Fl. June-Oct. *Frt.* May-June.
Distribution: It is usually parasitise of **Pyrus pashia,** distributed on the outer ranges upto 1,500m. altitude in Garhwal regions.
Medicinal use: Locally the whole plant is used in fever and Blood purifier. Antitumor activity is also found in this plant.

SANTALACEAE

Osyris wightiana Wall. ex Wight.
Habit: A large shrub; leaves ovote oblong. Flowers yellowish, fruits red when ripe.
Fl.-Almost all the year round, *Frt.*-Usually in cold season.
Distribution: Sporadically distributed in tropical Zone throughout the valleys upto 1000 m. altitude
Medicinal use: Infusion of leaves is used as powerful emetic and anodyne.

EUPHORBIACEAE

Andrachne cordifolia Muell, Arg.
Vernacular Name: Bhatindu.
Habit: A small shrub, branches round, glabrous, slender. Flowers greenish yellow.
Fl. May- Sept.
Distribution: Common in the tropical zone growing in the out hill ranges uto 2000m. altitude of Garhwal regions.
Medicinal use: The whole plant is poisonous and kills cattle when browsed.

Antidesma diandrum Roxb.
Habit: A small, medium sized shrub. Flowers green.
Fl. & Frt. June, July.
Distribution: Frequent in the tropical zone growing in ravines upto 1500m. altitude of Garhwal regions.
Medicinal use: Leaves are eaten by coolies when they feel thirsty. The leaves are made into chutney and consumed.

Bridelia montana willd.
Habit: A large to medium sized deciduous tree. Flowers yellow.
Fl. Sept. Nove.
Distribution: Sporadically distributed in the hotter parts of the area upto 900m. altitude in Garhwal regions.
Medicinal use: The bark is astringent. It is also useful in rheumatism.

Baliospermum montanum (Willd.) Muell-Arg.
S.N. Danti, *Vernacular Name:* Danti.
Habit: An erect under shrub 1-2m. high. Flowers greenish -yellow.
Fl. April-May.
Distribution: Common in the outer hill ranges of the area upto 900m. altitude or Garhwal regions.
Medicinal use: The whole plant is used as a purgative and rubefacien.

Emblica officinalis Gaertn.
S.N. Amalki, *Vernacular Name:* Anwala.
Habit: A moderate sized deciduous tree. Flowers small white. Fruit fleshy.
*Fl.*April, May.
Distribution: Common throughout the valleys upto 900m. altitude in Garhwal regions.
Medicinal use: It is used in Jaundice, dyspepsia and cough.
It is also used as a good restorative tonic. Fresh juice of the fruit is a tonic and asperiant. It is one of the ingredients of triphal and Chyavanprasha. Seeds are useful in Asthma and Bronchitis.

Euphorbia hirta Linn.
Vernacular Name: Dudhi, Dudhile.

Habit: An erect annual herb. Flowers greenish yellow.
Fl. Almost throughout the year.
Distribution: Commonly in the tropical zone throughout the exposed valleys upto 900m. altitude growing along road side. **E. thymifolia** also found in this region.
Medicinal use: The dried plant is useful in cough and asthma It is also useful in colic troubles, dysentery and as vermifuge.

Euphorbia parviflora Linn.
Habit: A small erect annual herb, leaves obliquely ovate- oblong variable. Flowers white or pale-purple.
Fl. & Frt. May- Jan.
Distribution: Sporadically distributed in the tropical zone growing in exposed dry places upto 1200m. altitude in Garhwal regions.
Medicinal use: Infusion of dried leaves is astringent and is useful in dysentery,diarrhoea and leucorrhoea.

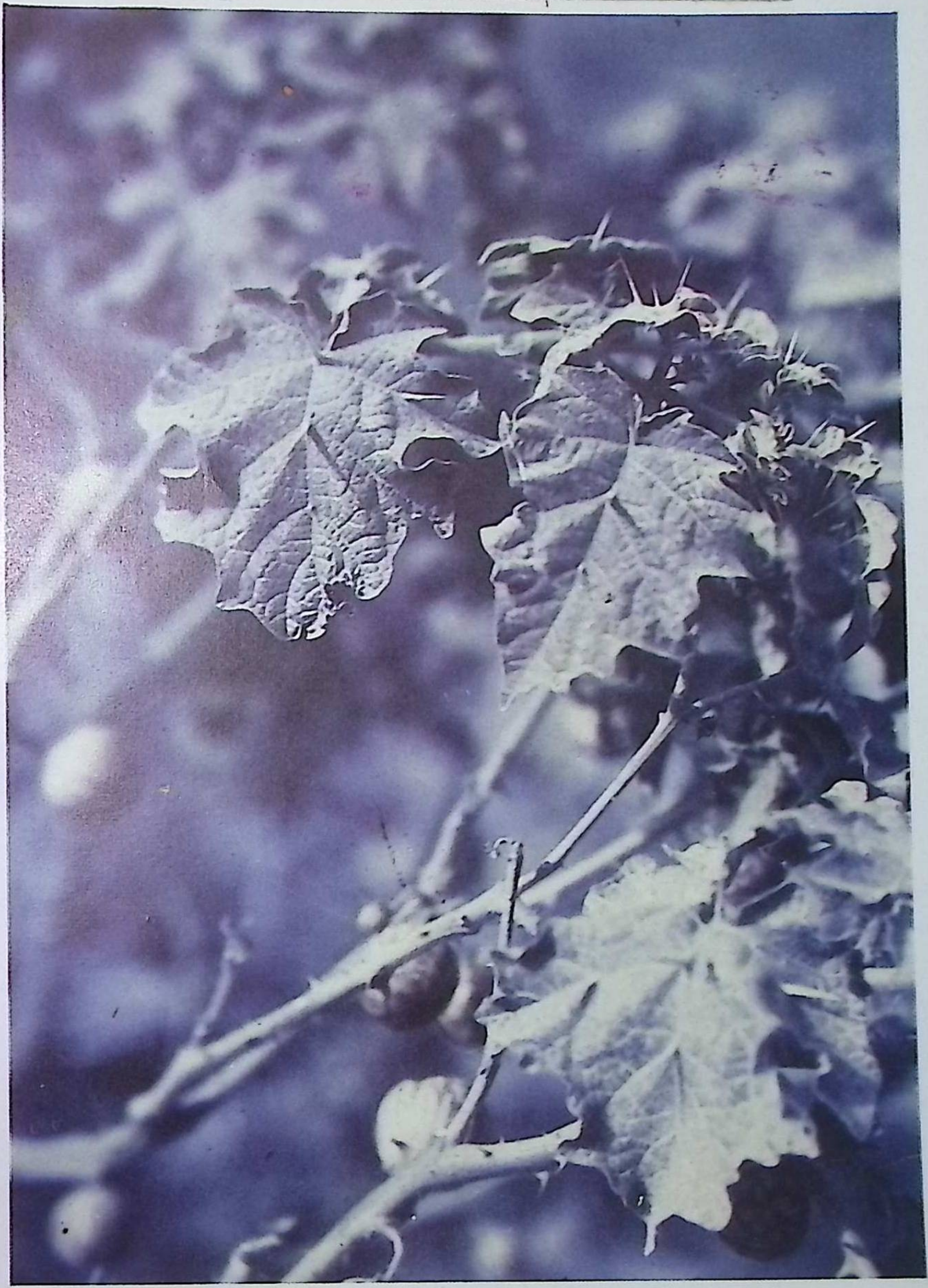
Euphorbia pilosa Linn.
S.N. Satala, *Vernacular Name:* Chopalo.
Habit: A perennial herb, stems 2-3 ft. high. Flowers bright yellow.
Fl. & Frt. June.
Distribution: Common in temperate zone, growing in moist slopes throughout the valleys of the area upto 2800m. altitude.
Medicinal use: Locally, the root is used as a purgative. It is also used in the treatment of Fistular sores. It is also used as vermifuges.

Euphorbia nivulia Linn.
Habit: A prickly fleshy shrub or small tree, flowers-yellow. Fruit reddish or yellowish.
Fl. May- June.
Distribution: Found commonly in the dry rocky hills in the outer Himalayas of Garhwal regions upto 1500m.
Medicinal use: The latex of the plant is used as vermicides, vesicants and purgative.

Euphorbia royleana Boiss.
Vernacular Name: Suru.
Habit: A large spinous shrub. Flowers yellowish.
Fl. June- July.
Distribution: common in tropical zone growing on rocky, exposed valleys upto 1500m. altitude.
Medicinal use: The latex of the plant is cathartic and anthelmintic.

Mallotus philippensis (Linn.) Muell Arg.
S.N.- Kampilaka. *Vernacular Name:* Ruina,
Habit: A small to medium sized tree. Flowers brownish or dull red. Fruits globose covered with a crimson to red coloured powdery indumentum, when ripe.
Fl. Sept.-Dec.

Medicinal Plants of
Garhwal Himalayas



Solanum Khaslanum clarke (Vanbhatta)

Distribution: Common throughout the lower valleys in moist precipitous slopes upto 1200m.
Medicinal use: The powdered fruit-coat is anthelmintic and vermifuge. It is sold in the market as 'Kamela'. Leaves and roots are useful in treatment of skin diseases.

Phyllanthus niruri Linn.
S.N. Bhumiamalki.
Habit: A small annual herb. Leaves small pale yellow. Flowers greenish- Yellow.
Fl. June, July.
Distribution: Sporadic in the tropical zone growing on dry exposed slopes and rocks upto 900m. altitude in Garhwal regions.
Medicinal use: The plant is diuretic and is useful in dropsy and also in the diseases of genito-urinarytract. Flesh leaves are a remedy for Jaundice and are also given in intermittent fevers.

Phyllanthus urinaria Linn.
*S.N.*Bhumiamalki.
Habit: An erect annual herb. Flowers greenish- yellow.
Fl. & Frt. July-Aug.
Distribution: It is growing sporadically in the tropical zone, on slopes upto 1000m. altitude.
Medicinal use: The whole plant is diuretic, useful in anaemia, jaundice and liver diseases.

Ricinus communis Linn.
S.N.-Eranda.
Habit: A small shrub. Flowers green yellow.
Fl. & Frt. May-June.
Distribution: It is common in the tropical zone growing on the outer hills of the area upto 900m. altitude.
Medicinal use: The oil extracted from the seed is purgative. The bark is used in the preparation of Indian medicines in vata roga.

Trewia polycarapa Benth.
Vernacular Name: Gambar.
Habit: A large tree. Flowers green yellow.
Fl. March-April.
Distribution: Sporadically distributed in the tropical zone on the out hill ranges of the area upto 900m. altitude.
Medicinal use: The bark is used to remove swelling and phlegmatic.

Sapium insigne Benth.
Habit: A small to middle sized deciduous tree. Flowers green.
Fl. Jan.-March.
Distribution: It is common on the foot hills and lower valleys upto 1200m. altitude in Garhwal regions.
Local use: Locally the milky juice of the tree is acrid.
Note: **Putrangiva roxburghii** Wall.**Jtropha cureas** L. also found in foot hills of the Garhwal region.

BUXACEAE

Buxus Wallichiana Baill.
Vernacular Name: Papari.
Habit: A small tree. Flower white; fruits green.
Fl. March-May.
Distribution: Sporadic in the temperate zones of the area upto 2400m. altitude in Garhwal regions.
Medicinal use: The leaf is purgative. It is poisonous to cattle. The tincture from the bark can be used as fabrifuge.

ULMACEAE nom. fam. Cons. URTICACEAE Sansu Benth & Hook.

Celtis australis Linn.
Vernacular Name: Kharika
Habit: A small tree, fruits orange red.
Fl. Cold season
Distribution: Sporadic in tropical zone throughout the valleys upto 1000m. altitude.
Medicinal use: The fruits are used as a remedy for amenorrhoea and colic.

Celtis cinnamomea Lindl. ex. Planch.
Vernacular Name: Kharit
Habit: A small tree. Leaves dark green, obliquely ovate. Fruit a drupe pisiform, ovoid.
Fl. Cold season.
Distribution: Common throughout the valleys upto 1500m. altitude in Garhwal regions.
Medicinal use: The juice of the leaves is used as a blood purifier. It is also used in cutaneous erruptions.

Ulmus walliachina Planch.
Vernacular Name: Harmara, *S.N.* Keetamara.
Habit: A moderate sized tree. Flowers in racemes, reddish-brown.
Fl. Sept. Oct.
Distribution: Common within the area upto 2700m. altitude.
Medicinal use: Locally the bark is used as a plaster in fracture and dislocation of bones.

CANNABINACEAE (non.fam.Cons)

Cannabis sativa Linn.
S.N. Vijaya, *Vernacular Name*: Bhanga.
Habit: An erect herb or under shrub 60-100 cm. high. Flowers pale yellow.
Fl. May-June.
Distribution: Common,throughout growing along roadsides and other waste lands, upto 2800m. altitude in Garhwal regions.
Medicinal use: The leaves have intoxicating effect. The bark is a remedy for hydrocoele. Flowers,

young leaves and stem yield a resinous exudation called Ganja or Charas which when consumed, cause a peculiar types of intoxication.

MORACEAE

Ficus benghalensis Linn.
S. Name: Vata, *Vernacular Name:* Var.
Habit: A large evergreen tree.
Fl. April-May.
Distribution: Common in the tropical zone along the outer hills upto 1500m. altitude.
Medicinal use: The whole plant is used in Indian medicine as astringent and inflammation.

Ficus cunia Buch.Ham. ex. Roxb.
Vernacular Name: Khaina.
Habit: A small tree. Flowers warty.
Fl. Aug. sept.
Distribution: Common in the tropical zone along the outer hills upto 1500m. altitude.

Ficus hispida Linn.
Habit: A small tree, with hallow branches.
Fl. Throughout the year.
Distribution: Common in outer hills of Garhwal in shady places upto 1300m. altitude. **F.gibbosa** also found in sub Himalayan tract of Garhwal region.

Ficus palmata Forsk.
Vernacular Name: Timla.
Habit: A small tree with smooth grey bark.
Frt. July-Oct.
Distribution: Common throughout the valleys upto 1500m. altitude.
Medicinal use: Locally the fruits are eaten when ripe. The young shoots are used as vegetable.

Ficus racemosa Linn. (F.glomerata Roxb.)
Vernacular Name: Gular, Udumbar.
Distribution: A large tree, sporadic in throughout the valleys upto 1500m. altitude in Garhwal regions.
Medicinal use: Locally the bark and fruits are used medicinally as an astringent and are useful in Deucorrhoea.

Ficus religiosa Linn.
S.N.-Asvattha, *Vernacular Name:* Pripal.
Habit: A large tree.
Fl. Dec-Jan.
Distribution: Cultivated common in Near villages, throughout the valleys upto 1500m. altitude in Garhwal region.

Medicinal use: The whole plant is used in medicine. bark astringent.

Morus alba Linn.
Vernacular Name: Shahtut, Toota.
Habit: A deciduous tree, Flowers greenish-yellow.
Fl. Feb. -March.
Distribution: Sporadic in the tropical zone throughout the valleys upto 1200m. altitude in Garhwal regions.
Medicinal use: The fruit is useful as a remedy for sore throat and dyspepsia.

URTICACAE

Urtica dioica Linn.
Vernacular Name: Kandali.
Habit: A small herb Flowers greenish-blue.
Fl. Aug.
Distribution: Common on grassy lands throughout the valleys upto 200m. altitude.
Medicinal use: The plant is useful in nephritic troubles. The young leaves are cooked as a vegetable and is given in sciatica, breathing troubles and heart troubles.

JUGLANDACEAE

Juglans regia Linn.
Vernacular Name: Akhrot, Akshota.
Habit: A large tree. Leaves alternate, oddpinnate, leaflets oblong ovate. Flowers green. Fruit ellipsoid, green nut.
Fl. Feb.-April. *Frt.* Oct.-Nov.
Distribution: It is growing wild throughout the valleys upto 3000m. altitude. It is also cultivated in some parts of Garhwal regions.
Medicinal use: The leaves are astringent and are a good remedy for scrofula. The bark is anthelmintic. The oil from the Kernels of the fruit is also anthelmintic and is useful in skin diseases.

MYRICACEAE

Myrica esculenta Buch. Ham. ex. Don. (Myrica nagi Thunb)
S.N.-Katphal, *Vernacular Name:* Kaphal.
Habit: An evergreen small tree. Flowers green, fruit an ovoid drupe, red when ripe.
Fl. Aug.-Oct. *Frt.* May-June.
Distribution: Common throughout the valleys upto 2100m. altitude.
Medicinal use: The bark of the tree is useful in Cholera and as a snuff in Catarrh with headache.

BETULACEAE

Betula utilis D.Don.
S.N. Bhojapatra, *Vernacular Name:* Bhoja.
Habit: A tree with smooth bark,brownish-white, peeling off in the sheets. Flowers green.
Fl. Sept.
Distribution: Common in alpine zone at Bhagirathi and Bhilangana valleys and Northern part of the area between 2700 to 4000m. altitude in Garhwal Himalayas.
Medicinal use: Locally the bark is used in medicine. The decoction of the bark is used as an antiseptic and also in Epilepsy and Convulsions etc. A fungus called "Bhuj-gera" developed on this tree is used for birth control.

FAGACEAE

Quercus dilatata Lindl ex Royle
Vernacular Name: Mouru.
Habit: A large tree, flower greenish-white.
Fl. May-June.
Distribution: Common in alpine zone throughout the valleys 2400m. to 3600m. altitude.
Local use: Locally the leaves are used as fodder for animals.

Quercus incana Roxb.
Vernacular Name: Ban, Banjha.
Habit: A large tree, leaves ovate-lanceolate, spirous, flowers greenish-white.
Fl. April, May. *Frt.* Dec., Jan.
Distribution: Common in temperate zone throughout the valleys upto 2800m. altitude in Garhwal Himalayas.
Local Use: The gum and fruits are diuretic and astringent. It is used in asthma.

Quercus semicarpifolia Smith
Vernacular Name: Kharsu.
Habit: A tall tree, flowers whitish-yellow.
Fl. June-July.
Distribution: Common in alpine zone throughout the valleys 2400 to 3600m. altitude in Garhwal Himalayas.

CORYLACEAE

Corylus jacquemontii Dene (C.eolurna Linn)
Vernacular Name: Bhotia Badam.
Habit: A small decideus tree, flowers in spikes.
Fl. March-May.
Distribution: Frequent in shady areas in Garhwal between 1700m. to 3000m. altitude.

Local use: Locally the nuts of the tree is used as a tonic and as depressant.

SALICACEAE

Populus ciliata Wall. ex. Royle.
Vernacular Name: Pahari piepal.
Habit: A tree with sticky leaf buds. Flower greenish-yellow in dropping raceme like Catkins.
Fl. March-April.
Distribution: Sporadic in the temperate zones distributed in the Bhagirathi valley upto 2800m. altitude.
Medicinal use: The bark is tonic and astringent. Decoction is useful in diarrhoea and dynestery.

Salix alba Linn.
Habit: A small tree. Flower in spikes.
Fl. April.
Distribution: Sporadic in temperate zones of the area along ravines upto 2800m. altitude. Often cultivated.
Medicinal use: The bark is a tonic and astringent. Decoction of the bark is useful in diarrhoea and dysentery.

Salix julacea Andren. (Salix wallichiana Andress.)
Habit: A small tree, flowering before leafing. Flowers dark brown.
Distribution: It is growing in temperate zone at Jaunsar, Bhagirthi valleys etc. between 1900 to 3000m. altitude. S.teterasperma Roxb.also found in this region.
Local use: Locally the branches are used as tooth-brushes.

ORCIDACEAE (Monocotyledons)

Dendrobium alpestre Royle.
Habit: An epiphytic orchid with white flowers growing on oak trees.
Fl. Feb.-May.
Distribution: Sporadically distributed at Agarə Khal, Ghuttu etc. upto 2100m. altitude in Garhwal regions.
Medicinal use: Locally the whole plant is used as tonic. It is also used in indigestion.

Dendrobium normale Fale.
S.N.-Swarma Jeiwanti,
Habit: A epithytic orchid with pinkish white flowers.
Fl. April.
Distribution: It is found growing sporadically at Phata, Gaurikhund etc. upto 2100m. altitude on oak trees.
Medicinal use: Locally the whole plant is used as tonic and as a aphrodisiacs.

Eulophia campertris Wall.
Vernacular Name: S.N. Salap.
Habit: An erect, terrestrial orchid with white (often deformed) tubers. Flowers pinkish-yellow.
Fl. May-June.
Distribution: Sporadically distributed in the alpine zone, throughout the valleys growing on grassy slopes between 2400 to 3600m. altitude.
Medicinal use: Locally the tubers are used as aphrodisiac stomachics and Demulecents

Eulophia herbacea Lindl.
Habit: Terresterial globrous herb. Flowers white.
Fl. July.
Distribution: It is found growing sporacdically at Pukhar upto 1500m. altitude in Garhwal regions.
Medicinal use: The roots are used as a medicine for general tonics

Habenaria intermedia D.Don.
S.N. : Riddhi
Habit: A terrestrial glorous orchid. Flowers pink white.
Fl. August.
Distribution: Common throughout the valleys growing on grassy slopes upto 2400m. altitude in Garhwal regions.
Medicinal use: Locally the tubers are used as general tonic. It is one of the eight drugs of the "Ashtravargra group" well known in Ayurveda. It is collected in large quantities from the Garhwal regions.

Habenaria acuminata Lindl.
Habit: An erect terrestrial orchid. Flowers pinkish-white.
Fl. June-July.
Distribution: Common throughout the valleys from 1800m. to 2700m. altitude in Garhwal Himalayas.
Medicinal use: The tubers are used as a tonic. It has a nutritive properties.

Habeneria groodyerioides Don. (Var-**H.offinis** Lindl.)
Habit: An erect terrestrial herb with white-pinkish flowers.
Fl. June-July.
Distribution: Sporadic in temperate zones from 1800m. to 2700m. altitude.
Medicinal use: Used as **Habeneria acuminata.**

Habeneria griffithi Hook.F.
Habit: A small orchid with whitish flowers.
Fl. May-June.
Distribution: Sporadic throughout the valleys from 1500 to 2100m. altitude in Garhwal Himalayas.
Note: Used as **Habeneria acuminate.**

Liparis paradoxa Lindl. Reich f.
Habit: A small bulbous orchid. Flowers yellowish.
Fl. June-July.
Distribution: Found in temperate regions between 1500 to 2300m altitude.
Medicinal use: It is used as asta varga for general tonic.

Liparis rostrata Reich f.
Habit: A bulbous orchid, flowers greenish in spikes.
Fl. July-Aug.
Distribution: Sporacdically distributed in the undergrowing of oak trees. It is recorded at Mussoorie, Chakrata, Karkee Dun between 2100 to 2400m. altitude. **L. rostrata** Roxb. also found in this region.
Note: The blubs are used as a tonic.

Malaxis acuminata D.Don (= **Microstylis Wallichii** D.Don.)
S.N.: Rishbhaka
Habit: A terrestrial herb. Leaves membranous, flowers small yellow.
Fl. July-Aug.
Distribution: Common in the temperate zone, growing on damp rocky slopes, throughout the valleys upto 1000m. altitude.
Medicinal use: Locally the underground tubers are considered as a tonic and lactagouage. It is collected in large quantities and used as "Asthavarga" drugs.

Microstylis muscifera Lindle.
S.N.: Jeevaka
Habit: An erect terrestrial orchid flowers yellow.
Fl. July-Aug.
Distribution: It is growing in alpine zone at Kedar Nath, Ponwali extending from 3000 to 3800m. altitude in Garhwal Himalayas.
Medicinal use: The roots are used as **M.acuminata.**

Orchis latifolia Linn.
S.N.-Munjataka, *Vernacular Name:* Salampanja.
Habit: An terrestrial orchid. root tubers. Flowers purple pink.
Fl. June-July.
Distribution: Common in the temperate zone throughout the valleys on grassy meadows between 2400m to 3800m. altitude in Garhwal Himalayas.
Medicinal use: The tubers are used as a tonic. These are collected on a commercial scale.

Pholodota articulata Lindl.
Vernacular Name: Jeewanti.
Habit: An epiphytic orchid, stem jointed. Flowers white green.
Fl. April-May.
Distribution: Common in temperate zone, throughout the valleys upto 2400m. altitude growing usually on oak trees.

Medicinal use: The whole plant is used as a tonic. Locally the whole plant is collected for sale. The other species.
Philidota imbricata Lindl. in the name of Jeewante is also similarly used.
Note: Some another species are found in Garhwal Himalayas, these are of medicinal or floristic importances.

1. **Cypripedium elegans** Reichub f.
   Terrestrial orchid 15-25 cm. high
2. **Cypripedium himalaicum** Rolfe.
   Terrestrial orchid 15-30 cm. high.
3. **Calanthe tricarinata** Lindl.
4. **Coelgyne ovalis** Lindl.

ZINGIBERACEAE

(Scitamineae Sense Benth. & Hook)

Costus speciosus (Koenig.) Smith.
S.N. Kaimuka.
Habit: A perennial herb, 60-100cm. high. Flowers white attractive.
Fl. July - Sept.
Distribution: Sporadic in tropical zone distributed on the outer hills upto 1000m. altitude.
Medicinal use: The roots are astringent, stimulant and anthelmintic.

Hedychium spicatum Smith.
S.N. Shati, *Vernacular Name:* Selru.
Habit: An erect herb with horizontal rhizomatous roots.
Flowers white, fragrant.
Fl. Aug.
Distribution: Common throughout the valleys of the area, distributed on rocky slopes upto 2100m. altitude.
Medicinal use: Locally the powdered rhizome mixed with curd is given to animals suffering from heat-stroke. The root-stock is useful in asthma and bronchitis.
Note: Large qualities are collected for trade in Hardwar, Dehra Dun markets.

Roscoea alpina Royle.
S.N. Kokoli.
Habit: A small erect herb with purplish white flowers.
Fl. June- July.
Distribution: Frequently distributed in the temperate zone on the alpine meadows over 2000m. altitude.
Medicinal use: The tuberous roots are used as a general tonic. It is useful in astrvarga group for vitality.

Roscoea Procera Wall.
S. N. Kakoli
Habit: A small erect herb. Flowers pinkish, white toliliac.
Fl. July-Aug.
Distribution: Common throughout the valleys on grassy rocky slope upto 2400m. altitude in Garhwal Himalayas.
Medicinal use: The tuberous roots are used as general tonic.
Small quantity is collected from the area in the name Astavarga, drug.

IRIDACEAE

Iris kumaonensis Wall ex.D.Don.
Habit: A perennial herb. with a creeping rhizome. Folwers blue.
Fl. April-July.
Distribution: Sporadic in alpine zone 2,400m. to 3,600m. altitude common in the temperate zone upto3800m. altitude in the sub alpine meadows in Garhwal Himalayas. **I nepalnsis** D.Don also found in this region.
Medicinal use: The roots are diuretic and also useful in fever.

DIOSCOREACEAE

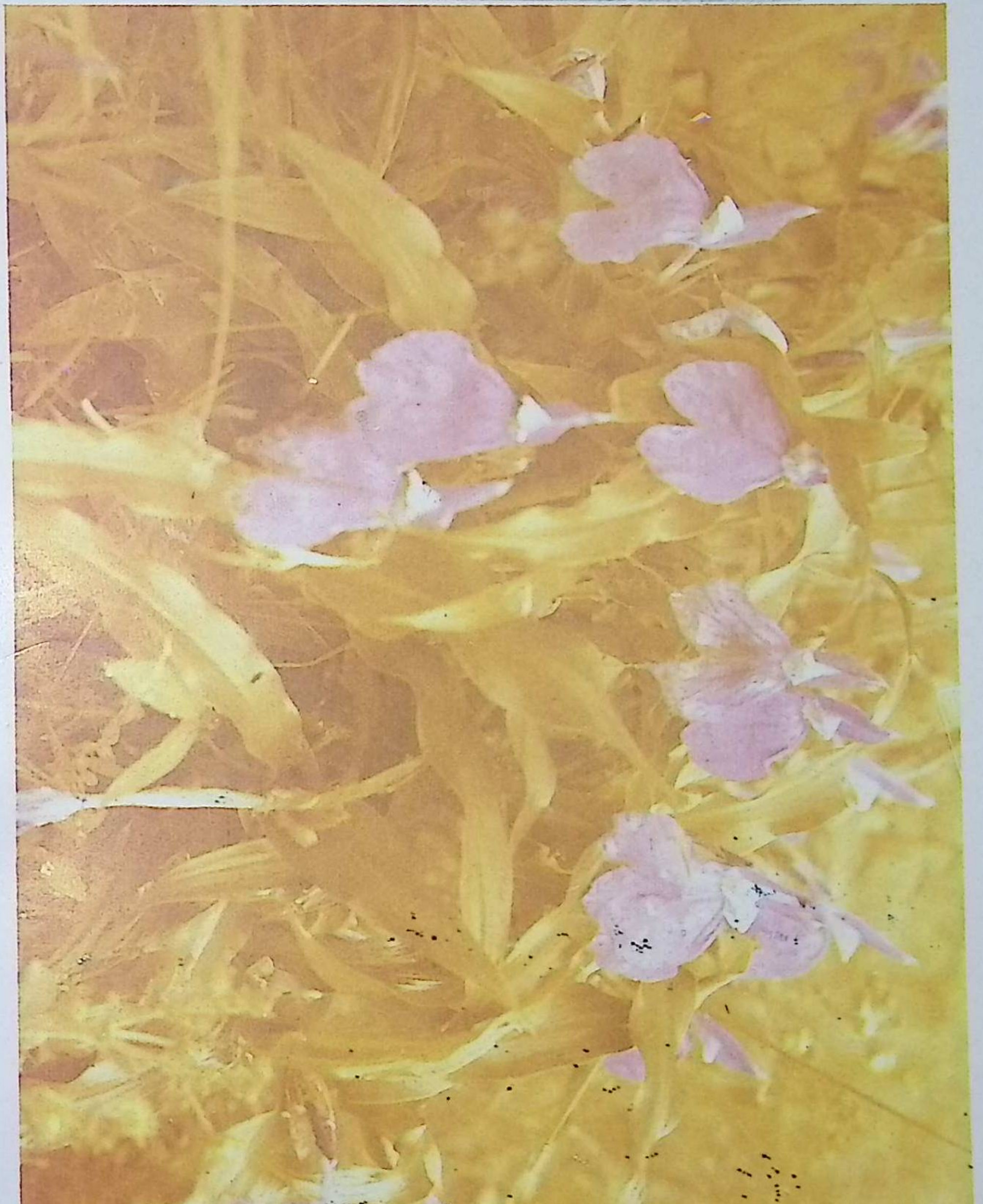
Dioscorea deltoidea Wall ex.Kunth.
Vernacular Name: Kiris.
Habit: A glabrous climber with tuberous roots. Flowers greenish-yellow.
Fl. June, July.
Distribution: Sporadic in temperate zone at Ghuttu, Rembara, Yamuna etc. upto 2700m. altitude.
Medicinal use: The tubers are used in the preparation of cortisone. Locally roots are used for washing of clothes.

Dioscorea bulbifera Linn.
S.N.: Barahikand, Ganthi.
Habit: A glabrous climber, stembearing numerous bulbis.
Flowers green yellow.
Fl. June, July.
Distribution: It is common in tropical zone throughout the valleys upto 1200m. altitude. **D. belophylla** Voigt also found in lower valleys of the Garhwal region.
Medicinal use: The tubers are useful in dysentery and piles. It is useful as an ingredient for Chavyanprasha. **D.belophylla** tubers are sold in Dehara Dun market under the name of Turar.

SMILACACEAE nom.fam.cons (LILIACEAE)

Asparaqus curilus Buch. Ham. Ex. Roxb.

Medicinal Plants of Garhwal Himalayas



Rescoea purpurea (Ridhi) Page No. 106

Vernacular name : Ghigini, Shatavri.
Habit: A well branched, sub-scandent undershrub. Flowers white.
Distribution: Common in tropical zone in the outer hills upto 1200m. altitude.
Medicinal use: The roots are aphrodisiac and tonic and used for cooling purposes. It is demulcent, diuretic, galactogouge.

Asparagus filicinus Buch. Ham. ex. D.Don.
Vernacular Name: Chiriya-Kanda.
Habit: A straggling under shrub, roots tuberous, flowers white.
Fl. May-June.
Distribution: Sporadic in temperate zone between 2400m. to 3600m. altitude in Garhwal Himalayas.
Local use: Locally the tuberous roots are used as lactagouage and tonic.

Asparatus gracilis Royle
Habit: A climber with white flowers.
Fl. June.
Distribution: Sporadically distributed at Ghonti, Indrola etc. between 900m. to 1200m. altitude.
Local use: Locally the roots are used as lactagouage and tonic.

Asparagus racemosus Willd.
S.N. Shatavari.
Habit: A climbing shrub, often greparious; roots linear tuberous. Flower white.
Distribution: Sporadic at Chakrata, Mussorie between 1500 to 2100m. altitude.
Medicinal use: Locally the tuberous roots are used as cooling and also as a tonic and lactagouage.

Allium blandum Wall.
Vernacular Name: Pangari.
Habit: A small herb. Flowers white.
Fl. June-July.
Distribution: Frequent in temperate zone throughout the valleys upto 3300m. altitude.
Local use: Locally the roots are used as a carminative. The leaves are used as a vegetable.

Allium govanianum Wall.
Habit: A bulbous erect herb. Flowers white. 30 cm. high. Leaves very narrow, aromatic.
Distribution: Sporadic in temperate zone at Gangotri, Goumukh, Kinkoliyakhal, Sukhi in Bhagirathi valley between 2700m to 3600m. altitude.

Allium Victorialio Linn.
Vernacular Name: Pangari.
Habit: A small herb with pink flowers.
Fl. July - Aug.
Distribution: Common in moist shady areas at Bhagirathi and Bhilangana valleys between 2700 to 3600m. altitude.
Medicinal use: Locally the whole plant is used as carminative and abdominal pain.

Allium stracheyi Baker.
Vernacular Name: Pharna
Habit: A bulbous, erect herb. Flowers whitish purple.
Fl. July, Aug.
Distribution: Common at Badri Nath, Gangotri and Kedar Nath areas between 2800m. to 3300m. altitude.
Local use: The leaves are used as vegetable and the bulbs are used for flavouring. It is also used as carminative.

Allium Wallichii Kunth.
Vernacular Name: Ladu.
Habit : A bulbous herb, 30 cm. high . Flowers purple.
Fl. July - Aug.
Distribution: Sporadic in alpine zone in grassy slopes between 2700m. to 3600m.
Local use : Locally whole plant is used as vegetable and also used as carminative.

Fritillaria cirrhosa D.Don.
Habit: A bulbous herb. Flowers yellowish.
Fl. July - Aug.
Distribution: Sporadic in alpine zone throughout the valleys at Ponwali, Kedar Nath and Tali upto 3800m. altitude.
Medicinal use: The roots are used as a tonic. Effective in calcium deficiency and anaemia.

Fritillaria Roylei Hook.
Habit: An erect, tall herb. Flowers yellowish - pink.
Fl. July, Aug.
Distribution: Scarce on meadows at Dayara in Bhagirathi valley Ponwali, Kinkoliyakhal in Bhilangana valley etc. between 2700m. to 3300m. altitude in Garwhal regions.
Medicinal use: Locally the bulbs are used as general tonic.

Gloriosa superba Linn.
Vernacular Name: Kalihari. Sans.N. Langalie.
Habit: An erect perennial herb, often twining. Root rhizomatous. Flowers reddish - yellow.
Fl. Aug.
Distribution: Sporadically distributed in the outer ranges of the areas upto 1000m. altitude.
Medicinal use: The roots are anthelmintic and is also useful in Leprosy. It is used as abortitacient and stimulant.

Lilium polyphyllum D.Don.
Sans.N. Langalie. *Vernacular Name:* Kalihari.
Habit: A tall herb, flowers pinkish white.
Fl. June - July.
Distribution: Sporadic in temperate zone at Ponwali, Tali, Kedar Nath, Madhmehshwer extending from 3000 to 3800m. altitude in Garhwal regions.
Medicinal use: Locally the bulbs are used as a general tonic. The tubers are sold in the market as

one of the "Ashtavarga" medicines as Kshirkakoli.

Lilium wallichianum Schult.f.
Habit: An erect herb, 60 cm. 1 m. high. Flowers white.
Fl. July, Aug.
Distribution: Sporadically distributed at Mussoorie, Bantoli etc. upto 1800m. altitude in Garhwal regions.
Medicinal use: The bulbous roots are used as a general tonic and aphsodisiacs.

Nomocharis oxypetala (Royle) Balf.f.
Habit: An erect herb. Flowers yellow.
Fl. July-Aug. *Frt.* Aug. onwards.
Distribution: It is growing sporadically in temperate zone at Kedar Nath, Ponwali, Tali ranging from 3000m. to 3800m. altitude.
Local use: Locally the roots are used as a general tonic and aphsodisiacs. **N.nana** this species also found in this region.

Polygonatum sibricm Delar Roche (**P. cirrhifolium** Royle)
S.N. - Mahameda.
Habit: A trilling herb, with thick root stock creeping apperpat of stem. Flowers white. Berry red when ripe.
Fl. June, July. *Frt.* Aug.
Distribution: Common in temperate Himalayas 2000m. to 2700m. in Garhwal region.
Medicinal use: Sweetish roots stock is used as Meda Mahameda in Astavarga group.

Polygonatum "verticillatum" Allioni.
Sans. Name - Meda.
Habit: An erect herb, stem angled at times twining. Flowers white.
Fl. April
Distribution: Common in temperate zone throughout the valleys of the area extending from 1500 to 3000m. altitude.
Medicinal use: Locally, the rhizomes are used as a tonic and aphrodisiac and used as "Ashtavarga" group.
Urginea indica Kunth. *S.N.* Palandu Janglipayaja.
Distribution: Common in Garhwal Himalayas upto 1500m elevation.

Smilax aspera Linn.
Vernacular Name: Kukarjari.
Habit: A large shruby climber, root stock thick, often creeping. Flowers white.
Fl. May - June.
Distribution: Common on the outer hills of the area, upto 1800m. altitude.

Medicinal use: Locally, the roots are used as a blood purifier and skin diseases.

ARACEAE

Acorus calamus Linn.
Sans. Name - Vacha, *Vernacular Name:* Vaja.
Habit: A perennial herb with cylindic, creeping rhizomes. Flowers green in spike.
Fl. Sept.
Distribution: Common throughout the valley of the area on moist ravines upto 1500m. altitude in Garhwal region.
Medicinal use: The rhizomes is aromatic and useful in fever and chronic diarrhoea. Commercially it is collected for trade.

COMMELINACEAE

Commelina obliqua Buch-Ham. ex. D. Don
Habit: A small spreading herb, rooting at the nodes. Flowers blue.
Fl. July - Aug.
Distribution: Sporadically distributed in temperate zone in the Northern ranges of the area upto 2400m. altitude.
Medicinal use: The roots are useful in fever and bilious affections.

Murdannia nudiflorum (L.) Brenan.
Habit: An erect herb. Flowers blue.
Fl. July - Sept.
Distribution: Sporadically distributed in the tropical zone upto 1500m. altitude in Garhwal regions.
Medicinal use: The oil extracted from the plant is used in the treatment of Leprosy.

Arisaema jacquemontii Blume (Araceae)
S.N. - Ajagari Sarpa, Bhotia-Tow,
Habit: An erect herb, flowers greenish-red, male and female flowers on different plants.
Fl. June, July
Distribution: Common in temperate regions in Bhilangana valley, Bhagirathi valley and Mandakini valley between 1,900m. to 3,000m. evelation.

Medicinal use: Tubers are poisonous, the tuber flour is used for preparing bread during the period of food scarcity.

Arisaema tortuosum Wall Schoot.
Vernacular Name: Sarpa.
Habit: An erect tuberous herb, stem 60 cm. high. Flowers green.
Fl. July.

Distribution: Common in temperate zone throughout the valleys ranging from 900 to 2400m. altitude.
Medicinal use: The plant is poisonous. Roots are used for killing worms of cattle.
Note: Following species are found in temperate zone in Garhwal Himalayas between 2000m. to 3600m. elevation:

1. **Arisaema concinnum** Schott- A tuberous herb.
2. **A.intermedium** Blume- An erect herb.
3. **Gonatonathus pumilus** Engl.- A tuberous herb.
4. **Typhonium diversifolium** Schott ex Lindl
   An erect tuberous herb.
   These tuberous are used in Tibetan system of medicine in Ladakh.

Scindapsus officinalis Schoot.
S. N. - Gajapipli, Hathkounl.
Habit: A climbing shrub with yellowish spathe and elongated fruit.
Fl. June - July.
Distribution: Common in the tropical zone on the outer hills of the area upto 900m. altitude.
Medicinal use: Locally the fruits are used in fever as diphoratic. Externally the paste is used in rheumatism.

EPHEDRACEAE (Gymnosperms)

Ephedra gerardiana Wall
Vernacular Name: Torgatha, *Trade name:* Somlata.
Habit: A small decumbent under shrub. Flowers pale- white.
Fl. June.-Aug.
Distribution: Sporadic in the temperate zone at Harsil, Mana, Micthi extending from 2700m. to 3600m. altitude in Garhwal Himalayas.
Medicinal use: The dried stem is powdered and given as snuffduringheadache. The whole plant is used in Asthma.

PINACEAE

Cedrus deodara (Roxb. ex Lambert) G. Don.
Vernacular Name: Devadara.
Habit: A large gregarious tree, branches pendulous female cones, few, male cones many.
Fl. Sept. - Oct., Ripe cones - Oct. Nov. following year.
Distribution: Common in tempeate zone throughout the valleys upto 3600m. altitude in Garhwal regions.
Medicinal use: The oil extracted from the wood is applied on rheumatic joints. The oil is also used as a remedy for ulcer.

Picea smithiana Wall. (Picea morinda Linn.)
Habit: Common tree, it is found in Bhagirath valleys from 2700m. to 3300m. altitude.

Pinus Wallichiana Jakson (Pinus griffithi Mcllel)
Vernacular Name: Kail.
Habit: A large tree. Leaves in bundles of 5. Female cone woody 15 to 30 cm. long.
Fl. April-June.
Distribution: Common in Harsil and Chamba areas upto 2400m. altitude in Garhwal regions.
Medicinal use: The resin or colophony is used in soap making and for sizing paper and cloth. Wood used for match-boxes and timber.

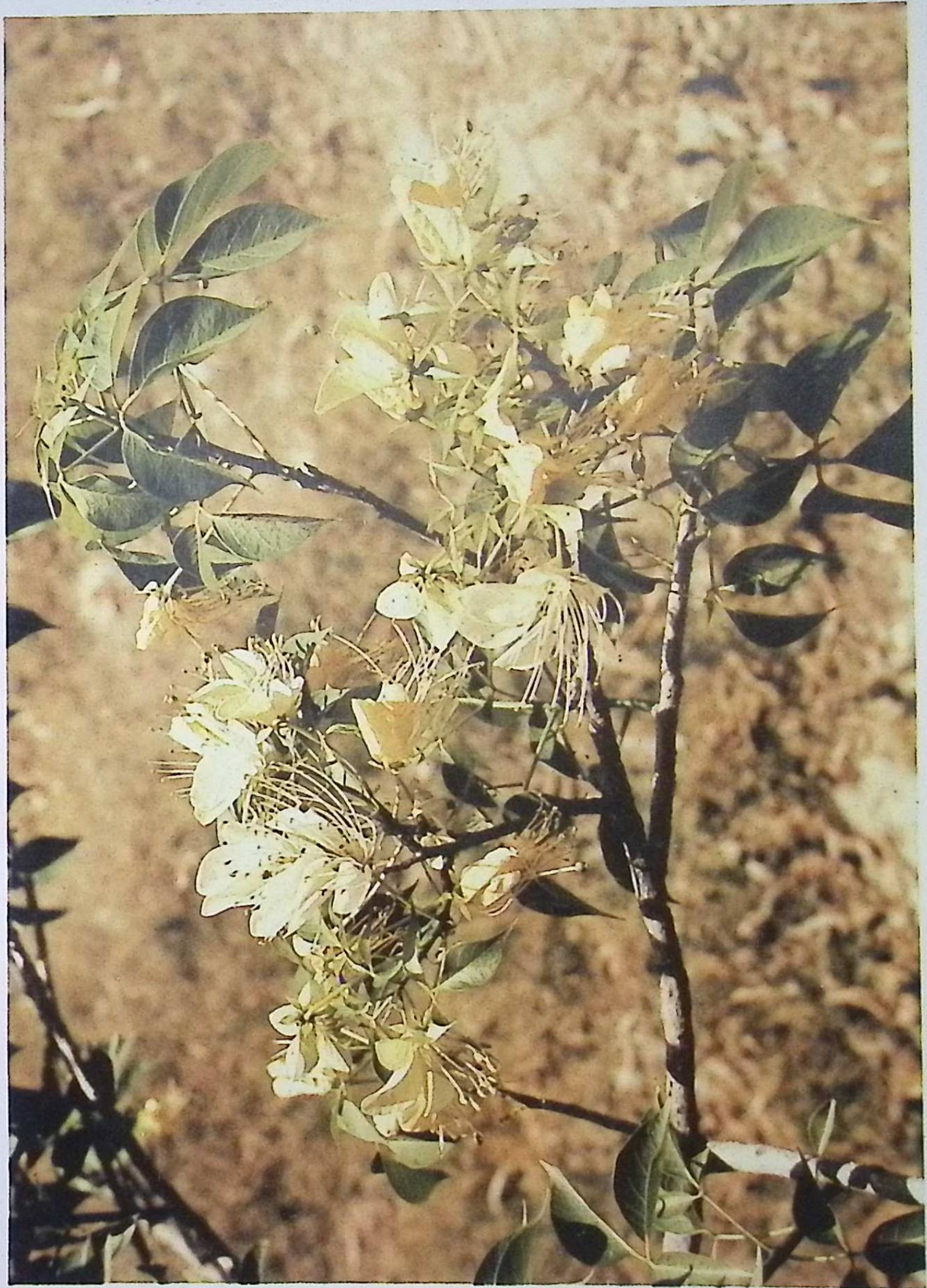
Pinus roxbughii Sargent
S. N. -Sarala, *Vernacular Name:* Chir.
Habit: A large tree. Leaves in bundles of 3. Female cones 10-20 cm. Long.
Fl. April- June.
Distribution: Abundant throughout the valleys of the area upto 2100m. altitude.
Medicinal use: The resin and wood oil is used in the preparation of Indian medicines. It is also used in the manufacture of Linoleum sealing-wax, oil cloth, Lubricating compounds.

Abies webbiana Lindl.
S. N. Talee, *Vernacular Name:* Morinda
Habit: A large evergreen tree, cones always erect oblong.
Fl. April - *Frt* Sept - Oct.
Distribution: Common in Jaunsar, and Garhwal valleys of 2,100m to 3,600m. altitute.
Medicinal use: Locally leaves used as carminative expectorant stomacic. **A.pindrow** spach also found in Garhwal region.

CUPRESSACEAE

Juniperus recurva Buch.- Ham.
Vernacular Name: Thelu, Halubeer.
Habit: An evergreen shrub with dropping branches. Fruit axillary ripen in the second year, dark purplish brown.
Fl. June. *Frt.* Aug-Sept.
Distribution: Sporadic in alpine zone throughout the valleys ranging between 3000m. to 4000m. altitude in Garhwal Himalayas.
Medicinal use: Locally the stem is used for the preparation of incenes as "Dhoop". The cones are used as substitute for 'Habusha'.

Juniperous squamate Buch Ham.
Verndcular Name: Dhoop
Habit: A small shrub with green cones.
Fl. June-July.
Distribution: Sporadic in temperate zone upto 3600m. altitude.



Crataeva nurvala **(Varuna)**

Medicinal use: Locally the wood powder is used as an aromatic dhoop.

Cuperessus torulosa D.Don.
Habit: A large evergreen tree, seeds compressed.
Fl. Jan. Feb. *Frt.* Oct. Nov.
Distribution: Found in temperate zone in Garhwal region between 2400m. to 3300m.
Local use: Locally the leaves are used as Dhoop. Wood useful as timber.

TAXACEAE

Taxus baccata Linn.
Vernacular Name: Thuner.
Habit: An evergreen tree. Leaves linear flattened distichous.
Fl. May - June.
Distribution: Common throughout the valleys from 2100m. to 3000m. altitude.
Medicinal use: Locally the leaves are commercially collected and used in the preparation of medicine expectorant and abortifacients medicines.

LYCOPODIACEAE

Lycopodium setaceum D.Don.
Habit: Epiphytic on tree trunk and on rocks with sporangia in axilr.
Distribution: Sporadic in temperate zone from 2100m. to 2700m. in Garhwal Himalayas
Medicinal use: Whole plant is diuretic, anti-septic and useful in rheumatism.

EQUISETACEAE

Equisetum debile Roxb.
Habit: An aquatic slant, growing on rocks.
Distribution: Common in Garhwal regions upto 2100m. elevation.
Local use: It is cooling, diuretic and useful in Gonorrhoea.
Note: Following gymnosperms are found in Central Garhwal Himalayas between 900m. to 2700m. elevation.

Lygodium japonicum Sw. (Schizeaceae)
Pteris cretica Linn. (Pteridaceae)
Onychiam contifgum Hop.
O.japonicum O. Kze Hop.
Adiantum candatum Linn.
A.venustum Linn.
Asplenium alternans Wall. (Aspleniaceae).

A.fontanum Bennh (Aspleniaceae).
A.laciniatum D.Don.
Polypodium amoenum Wall (Polypodiaceae).
Pleopeltis thunbergiana Kaulf . "
Pyrrosia flocculosa ching .
Arthromeris Wallichiana Ching .

DEFINITIONS OF MEDICAL TERMS

1. **Abortifacients**

   Drugs or agents causing the expulsion of the feotus.

2. **Absorbents**

   Drugs or medicines that produce absorption or exudation of diseased tissue.

3. **Alteratives**

   Certain remedies that alter the course of morbid conditions in some way not yet understood, perhaps by promoting metabolism.

4. **Anaphrodisiacs**

   Medicines used to allay sexual feeling.

5. **Anaesthetics**

   Medicine used to produce anaesthesia or unconsciousness.

6. **Anodynes**

   Medicines used to allay pain.

7. **Antacids**

   Antacids or alkalies are given to correct excessive acidity in the stomach that may be due to secretion of too abundant or too strongly acid a juice, as in acute dyspepsia, or due to the decomposition of food from imparied digestion.

8. **Anthelmintics**

   Agents that destroy (vermicides) or cause the expulsion (vermifuges) of intestinal worms.

9. **Antiemetics**

   Medicines which check vomiting.

10. **Antigalactagogues**

    Medicines that diminish lacteal secretion.

11. **Anhydrotics**

    Measures which diminish the amount of perspiration.

12. **Antilithics**

    Medicines used for the relief of calculous affections.

13. **Antiperiodics**

    Medicines used for the relief of malarial fevers.

14. **Antiphlogistics**

    Measures and medicines that are regarded as having some specific action in reducing or in preventing the progress of inflammatory process.

15. **Antipyretics**

    Medicines used for the reduction of bodily temperature in fevers.

16. **Antiseptics**

    Medicines which arrest or prevent putrefaction.

17. **Antispasmodics**

    Medicines used for the relief of nervous irritability and minor spasms.

18. **Aphrodisiacs**

    Drugs that increase the sexual desire and power.

19. Aromatics

Substance characterized by fragrant spicy taste or odour.

20. Astringents

Agents that produce contraction of muscular fibre and condensation of other tissues.

21. Carminatives.

Medicines which aid the expulsion of gas from the alimentary canal.

22. Caustics

Caustics or Escharotics are substances that disorganize or destroy living tissue.

23. Cholagogues

Those agents that stimulate the flow of bile and produce free purgation at the same time.

24. Demulcents

Medicines which smooth and protect the parts to which they are applied.

25. Deodorants

Substances which destroy or hide foul ordours.

26. Depressants

Depressants or sedatives are medicines which lower functional actutvity.

27. Diaphoretics

Medicines that increase the action of the skin and promote the secretion of the sweat glands.

28. Disinfectants

Substances which have the power of destroying disease germs.

29. Diuretics

Medicines which stimulate the activity of kidney and increase the output of urine.

30. Ecbolics

Medicines which produce abortion.

31. Emmenagogues

Remedies that restore the menstrual function.

32. Expectorants

Medicines which acts on the pulmonic membrance and increase or alter its secretions.

33. Galactagogue

Medicines that increase the lacteal secretion.

34. Haematinics

Substances which either directly or indirectly improve the quantity and quality of the hoemoglobin, are known as haematinics.

35. Haemostatics or Styptics

Medicine which arrest haemorrhage.

36. Hypnotics

Medicines which cause sleep.

37. Irritants and counter-irritants

These are certain substances employed to produce irritation artificially in some part of the body with the view of diminshing, counteracting or removing irritation or inflammation in some neighbouring part.

38. Laxatives

Mild purgatives.

39. Mydriatics

Medicines which cause dilatation of the pupil.

40. Myotics

Medicines which cause contraction of the pupils.

41. Nutrients

Substances which gives nourishment.

42. Parasiticides

These are medicines which destroy parasites.

43. Purgatives

Agents that increase or hasten intestinal evacuation.

44. Refrigerants

Medicines which diminish heat and quench thirst.

45. Rubefacients

Medicines which cause irritation and redness.

46. Sialagogues

Medicines which excite the salivary glands to secretion.

47. Stimulants

Medicines which increase functional activity.

48. Stomachics

Stimulants to the stomach.

49. Tonics

Medicines which permanently increase the systemic tone by stimulating nutrition.

50. Vermicides and Vermifuges

The former kill the intestinal worms and the later expel them.

51. Vesicants

Medicines which produce vesicles.

INDEX TO AYURVEDIC AND VERNACULAR NAMES

Page

1) Adha-pushpi 75
2) Agalie 3
3) Ahiphen (Aphim 11
4) Akanadi -
5) Akha (Arka) 71
6) Akash-bel 75
7) Akhoriya 31
8) Akhrot (Akshota) 100
9) Albaluka (Chilu) 42
10) Amil 90
11) Amalaki (Anwala) 95
12) Ambashtha 7
13) Amaraka 32
14) Ameel 94
15) Apamargha (Chirchita) 88
16) Archa 91
17) Aragbadh (Amaltas) 39
18) Aruka 42
19) Aranibhed (Bakar) 83
20) Ashvagandha 78
21) Asvattha (Peipal) 99
22) Atamagupta (Kuonch) 35
23) Atarasu 66
24) Atasi 22
25) Atibala (Kanghi) 18
26) Ayar (Aniyar) 65
27) Ativisa (Atis) 2
28) Avartarkee 20

(B)

29) Bair (Badara) 69
30) Bakaru 83
31) Bangori 65
32) Banjha (Ban) 101
33) Banakarkatee 9
34) Bano 54
35) Bala 19
36) Balabhed 20

Page

37) Bankundarura 48
38) Bahuputara (Shivalingi) 48
39) Bankanghi 18
40) Ban-Nimbu 25
41) Banyabani 87
42) Barmula 13
43) Barahikanda 106
44) Bramkamal 62
45) Basanti 22
46) Basuka 69
47) Banyabani 87
48) Bel (Bilva) 24
49) Bedarikanda 36
50) Bhilotaka (Kumkum) 27
51) Bhed-gandha 63
52) Bhimala 22
53) Bibhitaka 50
54) Bhamora 54
55) Bhangara (Bhriṅgraja) 60
56) Bharanghi 82
57) Bhatakietya 77
58) Bhiekal 41
59) Binda 84
60) Bhitlu 47
61) Bhatindu 95
62) Bhotiyabadam 101
63) Bhimelda 92
64) Bhojapatra 101
65) Bhumyamalki 97
66) Bhutakeshi 53
67) Bijaya (Bhang) 98
68) Bimbi 48
69) Bikantaka 14
70) Bisyabani 98
71) Bishkandra 58
72) Bis 1
73) Brahmi 51
74) Brinjeshipa 58
75) Birhatie 77

76) Buransa (Kurubaka) 65

(C)

77) Changeri 24
78) Chanchu 21
79) Chakramarda (Panwar) 39
80) Chilla 49
81) Chitraka 66
82) Chilu 43
83) Chingari 82
84) Chiriyakanda 107
85) Chopalu 63
86) Chhamariya 58
87) Chopalo (Saptala) 96
88) Choraka (Chora) 50
89) Chulukebanda 94
90) Chuolae 88
91) Chhatra 52
92) Chhikika 60

(D)

93) Dadima 47
94) Danti 95
95) Daruharidra 8
96) Devadara 111
97) Dhaman 21
98) Dhava 50
99) Dhataki 47
100) Dhatura 76
101) Dholu 91
102) Dudhi 95
103) Dudhlie 95
104) Dudhiya - Bis 2
105) Dronpushpi 84

(E)

106) Eranda 97

(G)

107) Gajapipli 111
108) Gambhar 97
109) Ghabhari 82
110) Ganga-tulsi 59
111) Gaunta
112) Gandhrayan 52
113) Ghantiali 3
114) Ghingaru
115) Ghinghirita
116) Gidar-tambaku 80
117) Ginori 93
118) Gindaru 7
119) Gopaldhup (Jatukanda)
120) Goniya 56
121) Gulmehandi 23
122) Guduchi (Giloya) 8
123) Gunja 33

(H)

124) Harimara 98
125) Hinsara 12
126) Haldu 54
127) Hinsa 12
128) Hinsalu 44
129) Hempushpa 61
130) Haritaki 50
131) Holbel
132) Hritapatare 78

(I)

133) Indrarjata 11

(J)

134) Jadhbar 4
135) Jakhmihayat 45
136) Jamini 42
137) Jambu 47
138) Jangligulab 43
139) Jangli-Chachinda 49
140) Jangli-Pudina 58
141) Jatamansi 57
142) Jatee 68

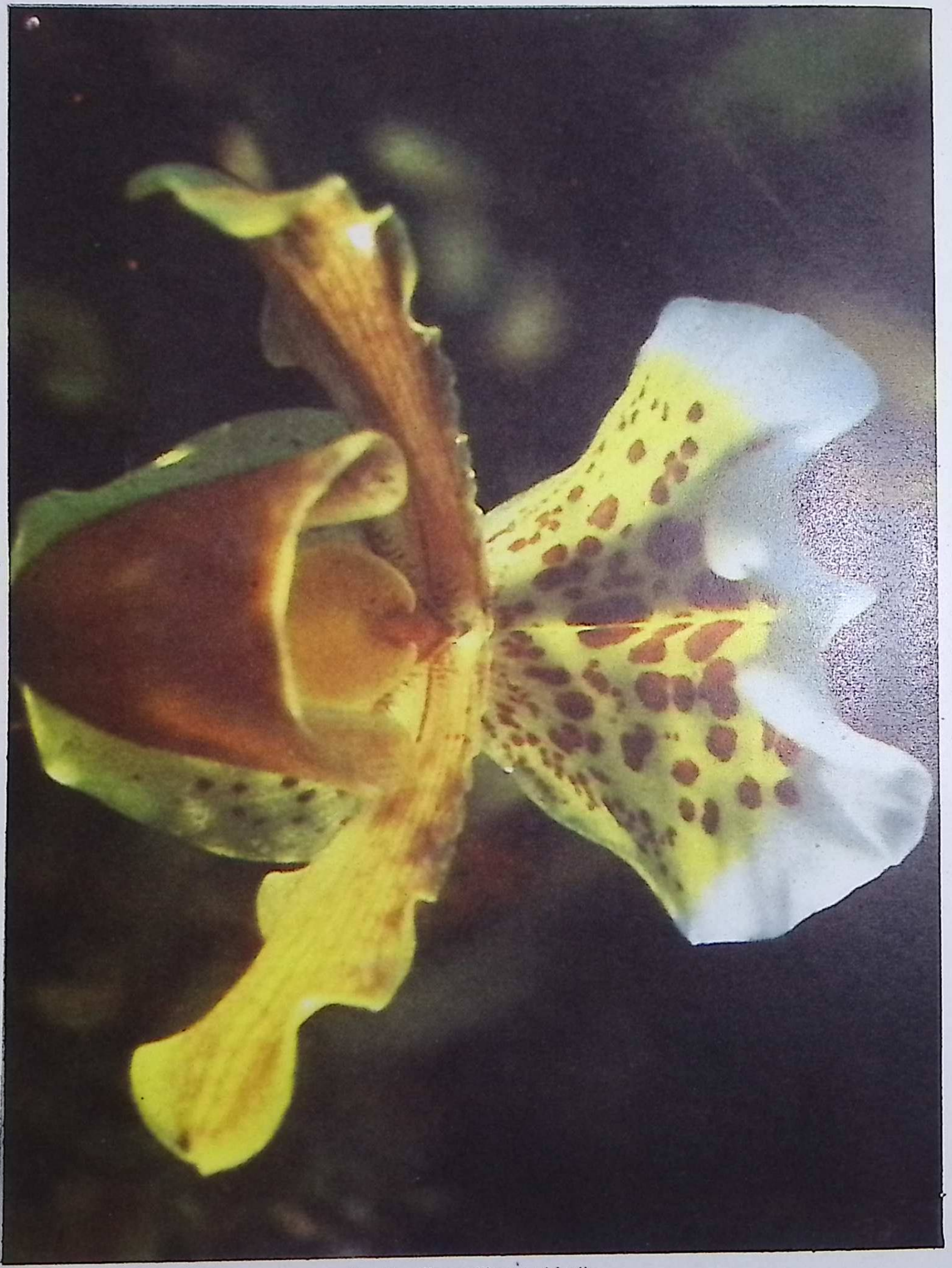
143)	Jakhiya	12
144)	Jargu	
145)	Jhinjhrita	21
146)	Jeeraka	51
147)	Jeevaka	104
148)	Jeevanti	104
149)	Jinghini	31
150)	Jonkmari	66
151)	Juhish	28
152)	Juha	4
153)	Jyotismati	27

(K)

154)	Kahinu	98
155)	Kail	112
156)	Kandali	100
157)	Karaunda	69
158)	Kaimuka	105
159)	Kashada	29
160)	Kalihari (Langlie)	108
161)	Kaivartake	28
162)	Kaphala (Katophala)	
163)	Kaliharonu	13
164)	Kanchan	25
165)	Kanchanara	38
166)	Katira	21
167)	Kakadani	30
168)	Kakjhanga	81
169)	Kakmachi	78
170)	Kakoli	105
171)	Kaktundi	71
172)	Kaladana	76
173)	Kaladhatura	76
174)	Kalanchu	44
175)	Kakrashringi	31
176)	Kamilia (Kampilaka)	96
177)	Kararkash	
178)	Kantakare	78
179)	Kantaloo	29
180)	Karwebootee	60
181)	Kandeera	5
182)	Kapasi	61
183)	Karbeilaka	48
184)	Kasmarda	39
185)	Kathamoria	
186)	Kakanasha	93
187)	Kiris	106
188)	Keetmari	58
189)	Keidarya	25
190)	Kedarpati	25
191)	Khadira	40
192)	Kharsu	101
193)	Kharenti	19
194)	Khina	98
195)	Khoru	9
196)	Khubaji	19
197)	Khublain	
198)	Khurmanay	33
199)	Kovidar	38
200)	Keerata (Chirayata)	
201)	Krishna-sariva	
202)	Kiari	12
203)	Kingori	8
204)	Kootha	63
205)	Kshirakoli	108
206)	Kubajaka (Kun,ā)	43
207)	Kukarjari	109
208)	Katphal	100
209)	Kutki, Katuki	79
210)	Kuri	68
211)	Kutja	70
212)	Kulatha	35

(L)

213)	Lat-Karanja	38
214)	Lalachoo	
215)	Ladu	108
216)	Laljari	74
217)	Lajjaluo	40
218)	Lachkura	56
219)	Lesar	
220)	Lugamik	60
221)	Lesora	
222)	Lodhara	67



Cypripedium villosum Lindl.

(M)

223) Madana 56
224) Madar 35
225) Madhuka 68
226) Madhavilata 23
227) Mainphla 56
228) Maljhan 38
229) Mameera 2
230) Maneeroo 3
231) Mandookparnie 51
232) Manjishtha 56
233) Mariabel 72
234) Mariabel
235) Marchha 89
236) Marchhole 31
237) Marchula 25
238) Marodphali 20
239) Mahaniba 26
240) Masparni 37
241) Masuri 32
242) Meda 109
243) Mahameda 109
244) Mehal 43
245) Meethabish 1
246) Meethakuda 70
247) Mokshaka
248) Mudagaparni 34
249) Muchookanda 21
250) Mundika 64
251) Munjataka 104
252) Mugawan
253) Mugawan
254) Moorva 72
255) Mouru 101
256) Muramansi 95

(N)

257) Neelkanthi
258) Nimba 26
259) Nimbuka 25
260) Nirgundi 83
261) Nirbishi 91

(O)

262) Ogal 90

(P)

263) Pachnala 14
264) Padamaka 42
265) Padariya 55
266) Parshik-yavani 77
267) Pangaera 30
268) Papari 55
269) Pangari 107
270) Pangchi
271) Paharipeipal 102
272) Patal-Garudi 7
273) Parni 34
274) Paribhadara 35
275) Parijata (Kuri) 68
276) Panibeel 29
277) Parpatka 12
278) Pashanbhed 44
279) Patha 6
280) Phalasa 22
281) Pathil 43
282) Phapara 90
283) Patharphori 80
284) Phenkamal 62
285) Pharna 108
286) Pippali 92
287) Pipal
288) Pinna
289) Pind-Tagar 57
290) Pitamoola 5
291) Pitmalti 68
292) Podina 85
293) Priyangu 81
294) Pundrica
295) Prishnaparni 37
296) Punarnava 87

(R)

297) Rajpatha 7

298) Ratanjot 74
299) Revanchaani
300) Ridhi 103
301) Rishbhaka 104
302) Reetha 30
303) Rudarvantee 33
304) Runish 40

(S)

305) Sahdevi 65
306) Shal 15
307) Shalmali 15
308) Shalparni 34
309) Salap 103
310) Saptaparana 69
311) Saphed-siras 40
312) Sarpa (Ajagari) 110
313) Saral (Chir) 36
314) Swetavacha 59
315) Syonaka 80
316) Shingru 32
317) Shilangi 69
318) Sankhahuli 76
319) Shati 105
320) Shatavari 107
321) Sharpunkha 36
322) Shyamsundri 39
323) Semuru 65
324) Sheriesa
325) Singu 51
326) Siriyaka
327) Somlata 111
328) Suru 96
329) Swarnajeevanti 102
330) Swarnakshiri 10

(T)

331) Tejapatra 92
332) Tambaku 77
333) Taliesa
334) Tagara 57
335) Tendu 67
336) Timbru 26
337) Tilpharo 7
338) Tilaka 56
339) Tillen (Tilvaka) 57
340) Timala 99
341) Thanthara 28
342) Tinisha 35
343) Tomadiya 17
344) Thelu, Dhuplakari 112
345) Thuner (Telisa) 113
346) Totar (Daruharidura) 9
347) Tripatra
348) Triyamana (Karu) 73
348) Tuna 26
349) Tungla 31

(U)

350) Udsalap 5
351) Udumbar 99

(V)

352) Vanapsha
353) Vastooka 89
354) Vasaka 80
355) Vacha 110
356) Vastanabha 1
357) Vata 99
358) Varuna 13
359) Vishala 49
360) Vyaghranakhi 12
361) Vanpalandu 109

INDEX TO BOTANICAL NAMES

Page
Abies pindrow Spach. 112
A.webbiana Lindl. 112
Abrus precatorius Linn. 33
Abutilon hirtum D.Don. 18
A. Indicum (Linn.) Sw. 18
Acacia catechu Willd. 40
Achillea millefolium Linn. 114
Achyranthes aspera Linn. 88
A.bidentata Blume 88
Aconitum atrox Mukerjee 1
A.falconeri Staph 1
A.heterophyllum Wall. 2
A.violaceum Jacq. 2
Acorus Calamus Linn. 110
Actinidiaceae 18
Actaea spicata Linn. 2
Adenostemma lavenia O. Kuntze 58
Acantaceae 80
Adhatoda vasica Nees 80
Adina cordifolia (Roxb.) Benth. & Hook.f. 54
Aegle marmelos Corr. 24
Aesculus indica Celebr. 30
Aerva scandens Wall. 88
Agaricus camperstris Linn.
Ageratum conyzoides Linn. 58
Agrimonia pilosa Ledeb. 40
Ainsliaea aptera DC. 60
Ajuga bracteosa Wall. ex Benth. 83
Albizzia lebbeck Benth 40
A.ordoratissima Benth 40
Allium govanianum Wall. 107
A.stracheyi Baker 108
A.victorialis Linn. 107
A.wallichii Kunth 108
A.blandum Wall. 107
Alstonia scholaris R.Br. 69
Ampelocissus latifolia Planch 29
Amaranthaceae 88
Amaranthes painculatus Linn. 89
A.gangeticus Linn. 88

Page
A.gracilis Desf. 88
A.spinosus Linn. 88
Amphicome emodi Royle 80
Anacardiaceae 31
Anagallis arvensis Linn. 66
Aneilema divergens Clarke
A.nudiflorum R.Br.
A.spicatum R.Br.
Anemone obtusiloba D.Don 3
A.vitifolia Ham. 3
A.rivularis Buch Ham. 3
Angelica glauca Edqw. 50
Anisomeles indica (Linn.) Ktze 84
Andrachne cordifolia Muell 95
Andropogon trietis Nees ex Hook.
Anogeissus latifolia Wall 50
Antidesma diandrum Routh 95
Appiaceae 50
Apocymaceae 69
Apium tennuifolium T.Lell. 51
Aquilegia pubiflora Wall ex Royle 3
Araliaceae 54
Argeminia eupatorium Linn. 40
Argemone mexicana Linn. 10
Araceae 110
Arisaema concinnum Schott 111
A.jacquemontii Blume 110
A.tortuosum (Wall.) Schott. 110
Artemisia maritima Linn. 115
A.sacrorum Ledeb. 59
A.scoparia Weldst & Kit 59
A.nilagarica Pamp. 59
Asclepiadaceae 71
Asclepias curassavica Linn. 71
Asteraceae 58
Astragalus candolleanus Royle 33
A.himalayanus Klotz 33
A.leucocephalus Grah. 33
A.strictus Grah. 33
Asparagus currilis Royle 106
A.filicinus Buch. - Ham. 107

A.gracilis Royle 107
A.racemosus Willd. 107
Azadirachta indica A.Juss. 53
Atylosia mollis Benth 34
A.scarabaeoides Benth 34
Aster Thomsanii C.B.Cl 59
A.tricephalus C.B.Cl. 59
A.himalicus Cl. 60
A.asperulus Wall 60
Bacopa monnieri (Linn.) Pennell 78
Balsaminaceae 23
Baliosperum montanum Muell-Arg. 95
Barleria cristata Linn. 81
B.prionitis Linn. 81
Barbarea Vulgaris Br. 13
Bauhinia malabarica Roxb. 39
B.purpurea Linn. 38
B.retusa Roxb. 38
B.Vahlii W. & A. 38
B.Variegata Linn. 38
Berberidaceae 8
Berberis floribunda (Wall.) D.Don. 8
B.asiatica Roxb. ex. DC. 8
B.chitria Lindl. 9
B.coriaria Brand 9
B.lycium Royle 9
B.petiolaris Wall. ex. D.Don. 9
B.edgeworthiana Schn. 9
B.jaeschkeana C.K 9
Bergenia ciliata (Royle) Raizada 44
B.ligulata (Wall.) Engl. 44
B.stracheyii (Hook.f.Th.) Engl. 45
Betula utilis D.Don. 101
Betulaceae 101
B.alnoides Buch. Ham.
Bignomiaceae 155
Bidens interinata (Lour.) Merr. 60
Bombacaceae 20
Boerhaavia diffusa Linn. 87
Brassicaceae 13
Bridelia montana Willd 95
Bryonopsis laciniosa (Linn.) Naud. 48
Boraginaceae 74
Buchanania lanzan Spreng 63
Bupleurum candollii Wall. 51
B.falcatum Linn. 51
B.maddeni Clarke 51
B.tenue D.Don. 51
B.lanceolatum Wall 51
Butea monosperma (Lam.) Kuntze
Buxaceae 98
Buxus wallichiana Baill. 98
Caesalpinaceae 38
Caesalpinia cristata Linn. 38
Caesalpinia sepiaria Roxb 38
Callicarpa macrophylla Vahl. 81
Calotropis procera (Ait.) R.Br. 71
Caprifoliaceae 56
Caltha palustris Linn 3
Cannabinaceae 98
Calanthe tricarinate Lindl. 105
Cannabis sativa Linn. 98
Caryophyllaceae 16
Capsella bursa-pastoris Medic. 13
Capparaceae 12
Capparis horrida Linn. 12
C.sepiaria Linn. 12
C.spinosa Linn. 12
Cardamine impatiens Linn. 13
C.inaeyatii E.Sch 13
C.macrophylla Willd. 13
Cardiospermum halicacabum Linn. 30
Carissa opoca stapf. 69
Carum carvi Linn. 51
Casearia graveolens Dalz. 49
C.tomentosa Roxb. 49
Cassia fistula Linn. 39
C.occidentalis Linn. 39
C.leavigata Willd. 39
C.tora Linn. 39
C.absus Linn. 39
C.obtrisifolia Linn 39
C.sophera Linn. 39
Cedrela tonna Roxb. 26
Cedrus deodara (Roxb.) Loud. 111
Celastraceae 27
Celastrus paniculatus Willd. 27
Celosia argentea Linn. 89
Celtis australis Linn. 98
C.cinnamomea Lindl. 98

Centella asiatica (Linn.) Urban. 51
Centipeda minima A.Br. 60
Centineda orbicularis Lour
Ceronegia Longifolia Wall
Chenopodiaceae 174
Chenopodium ambrasiodes Linn. 89
C.botrys Linn. 89
C.album Linn. 89
Cinnamomum tamala Nees & Eberm. 92
Cissampelos pareira Linn. 6
Cissus repens Lam.
Citrus medica Linn 25
Cirsium wallchii DC 61
Citrus medica Linn. 12
Cleome gynandra Linn. 12
C.viscosa Linn. 12
Clematis napoulensis DC 3
Clematis montana Buch.Ham. 4
C.barbellata Edgew. 4
C.acuminata DC. 4
C.buchaniana DC. 4
Clinopodium vulgare Linn. 84
Clerodendrum indicum (Linn.) ktze 82
C.serratum (Linn.) Moon. 82
Coccinia indica W.& A. 48
Coelogyne ovalis Lindl 105
Cocculus hirsutus (Linn.) Diels. 7
C.laurifolius DC. 7
Colobrookia oppositifolia Smith. 84
Combretaceae 50
Commelina obliqua Buch.- Ham 110
Convolvulaceae 75
Convolvulus arvensis Linn. 75
Coriariaceae 32
Corchorus aestuans Linn. 21
C.capsularis Linn. 21
Corylaceae 101
Corylus jacquimontir Dene 101
Cordia dichotoma Forst. f. 74
Commelinacea 110
Coriaria nepalensis Wall. 32
Cornaceae 54
Cornus capitata Wall 54
C.macrophylla Wall 54
C.oblonga Wall 54
Corydalis ramosa Wall 11
C.govaniana Wall 11
Costus speciosus (Koen.) Sm. 105
Cofoneaster bacillaris Wall. ex. Lindl. 40
C.microphylla Wall. ex. Lindl. 41
Craţaeva nurvala Ham. 12.
Crotalaria albida Heyne ex Roth 34
C.retusa Linn 34
Cryptolepis buchanani Roem. & Schult.71
Crassulaceae 45
Cucurbitaceae 48
Cucumis trigonus Roxb. 48
Cupressaceae 112
Cuperessus torulosa D.Don 113
Cuscuta reflexa Roxb. 75
Cynodon dactylon (Linn.) Pers.
Cynoglossum micranthum Desf. 74
C.wallichi D.Don. 74
Cypripedium elegans Reichb 105
C.himalalicum Rolfe. 105
Daphna papyracea Wall. ex Steud. 93
Datura metel Linn. 76
D. Stramonium Linn. 76
Deeringia amaranthoides Merrill 89
Delphinium denudatum Wall 4
D.brunonianum Royle 4
D.vestitum Wall. 4
Dendrobium alpestre Royle. 102
D.normale Falc. 102
Dendropthoe falcata (Linn. f.) Etting. 94
Desmodium gangeticum DC. 34
D.pulchellum Benth. ex. Baker 35
D. laxiflorum DC. 35
D. latifolium DC. 34
Dicrocephala latifolia DC. 60
Didymocarpus pedicellata Br. 80
Digitalis lanata Erth. 78
Dioscoreaceae 106
Dioscrorea bulbifera Linn. 106
D.deltoidea Wall. 106
D.belophylla Voit. 106
Diospyros montana Roxb. 67
Dipsaceae 67
Dolichos biflorus Linn. 35
Droseraceae 46

Drosera peltat Sm. 46
Dregea Volbilis Benth 72
Eclipta alba Hassk. 60
Ebenaceae 67
Elaeagnus umbellata Thunb. 93
Elaeagnaceae 93
Elaeodendron glaucum Pers. 55
Elsholtzia cristata Willd. 84
E.fruticosa Refder 84
Emblica officinalis Gaertn. 95
Ephedra gerardiana Wall. 111
Ephedraceae 111
Epilobium hirsutum Linn. 47
Equisetaceae 113
Erigeron canadensis Linn. 61
E.linifolius Willd. 61
Erythrina suberosa Roxb. 35
Ericaceae 128
Eulophia campestris Wall. 103
E.herbacea Lindl. 103
Equisetum debile Roxb 113
Euonymus hamiltonianus Wall. 27
E.tingens Wall. 27
E.pendulus Wall 27
Eupho N.biaceae 95
Euphorbia hirta Linn. 95
E.hypericifolia Linn.
E. nivulia Buch.Ham. 96
E.pilosa Linn. 96
E.royleana Boiss. 96
E.thymifolia Linn 96
E.parviflora Linn. 96
Evolvulus alsinoides Linn. 76
Exacum tetragonum Roxb. 72
Fabaceae 33
Fagopyrum esculentum Moench 90
F.tataricum Gaertn. 90
Ficoidaceae 54
Ficus bengalensis Linn. 99
F.cunia Ham. ex. Roxb. 99
F.gibbosa Blume. 99
F.hispida Linn. f. 99
F.lacor Buch. - Ham.
F.palmata Forsk. 99
F.racemosa Linn. 99
F.religiosa Linn. 99
Fagaceae 101
Flacourtiaceae 14
Flacourtia indica Merr. 14
F.jangomas (Lour.) Roeusch. 14
Flemingia bracteata (Roxb.) H.L. 35
F.vestita Benth. 35
Fragaria nubicola Lindl. 41
Fritillaria cirrhosa D.Don. 108
F.roylei Hook 108
Fumariaceae 11
Fumaria indica Pugsley 11
Galinsoga parviflora Cav. 61
Galium aparine Linn. 54
G.rotundifolium Linn. 55
Gentiamceae 73
Gentiana Kurroo Royle 73
Geranianceae 23
Gentiana argentea DC 73
G.capitata Buch-Ham. 73
G.pedunculata Royle 73
G.tenella H.Smith 73
Geraium nepalense Sweet. 23
G.ocellatum Camb. 23
G.wallichianum D.Don. 23
Geum urbanum Linn. 41
G.elatum Wall. 41
Gesneraceae 80
Gerbera lanuginosa Benth 61
Girardinia heterophylla Done.
Glochidion velutinum Wight.
Gloriosa superba Linn. 108
Glycosmis penthaphylla Correa 25
Gmelina arborea Linn. 82
Gnaphalium luteoalbum Linn. 61
Grewia asiatica Linn. 22
G.optiva Drum ex. berret. 22
G.sclerophylla Roxb. 22
Gyandropsis gynandra (Linn.) Briquet 24
Gynura cusimbua (Don.) Moon. 61
Habenaria acuminata Lindl. 103
H.goodyeroides D.Don 103
H.griffithii Hook. f. 103
H.imbricata Lindl.
H.intermedia D.Don 103

Hamiltonia suaveolens Roxb. 55
Hedera nepalensis K.Koch. 54
Hedychium spicatum Ham. ex. Smith. 105
Helicteres isora Linn. 20
Heliotropium strigosum Willd. 74
Heracleum canescens Lindl. 52
H.pinnatum Clarke. 52
Hibiscus cancellatus Roxb. 19
H.punges Roxb. 19
Hippophae rhamnoides Linn. 93
H.salicifolia D.Don.
Hippocastanaceae 60
Hiptage benahalensis Kurz. 23
Holarrhena antidysenterica Wall 70
Hoya longifolia Wall. 71
Hydrangeaceae 46
Hydrangea aspera Buch. Ham. 46
H.altissima Wall. 46
Hydrocotyle javanica Thunb. 52
H.rotundifolia Roxb. 52
Hyoscyamus niger Linn. 77
Hypericaceae 17
Hypericum hookerianum W. & A. 17
H.patulum Thunb. 18
H.perforathum Linn. 17
Ichnocarpus frustescens R.Br. 70
Impatiens balsamina Linn. 23
I.racemosa DC.
I. thomsoni Hook.f. 24
Ipomoea eriocarpa R.Br. 76
I.hederacea (Linn.) Jacq. 76
Iridaceae 106
Iris kumaonensis Wall. 106
I.nepalensis D.Don. 106
Jasminum humile Linn. 68
J.grandiflorum Linn. 68
J.officinale Linn. 68
Jatropha curcas Linn. 97
Juglandaceae 100
Juglans regia Linn. 100
Juniperus recurva Buch. - Ham. 112
J.squamata Ham. 112
Jurinea macrosephala Benth. 62
J.himalica R.Br. 62
Kalanchoe spathulata (Poir.) DC. 45
Kickxia ramosissima.(Wall.) Janchen. 79
Labiateae 83
Lactuca seriola Linn. 62
L.macrorhiza Hook. f. 62
L.sikkimensis steble 62
Lagenaria siceraria Standl. 84
Lamium album betiolatum Linn. 84
Lamium album Linn. 85
Lannea coromandelica (Houff.) Merrill.31
Lantana camara Linn. 82
Lauraceae 92
Leea edgeworthis Santap. 30
Leucas cephalotes Spreng. 85
Linaceae 22
Linum ustitatissimum Deed 22
Lilium polyphyllum Don. 108
L.wallichianum Schult.f. 109
Lindenbergia indica (L) O.Kuntze 79
Liparis paradoxa Roxb. f. 104
L.rostrata Roxb.f. 104
Liliaceae 106
Litsea umbrosa Nees. 93
Lonicera glauca HK.f. & Th. 56
Loranthaceae 94
Lycopodium setaceum D.Don 113
Lynonia Ovalifolia (Wall.) Drude 65
Lycopodiaceae 113
Lychnis fimbriata Wall. 17
L.piolosa Edgw. 17
L.nutans. Benth 17
Lytharaceae 47
Machilus ordoratiassima Nees. 93
Macrotomia benthami DC. 74
Madhuca indica J.F.Gmel. 68
Maesa indica Wall. 67
Mallotus philippinensis Muell. - Arg. 96
Malvaceae 18
Malva rotundifolia Linn. 19
M.verticillata Linn. 19
M.neglecta Wall. 19
Malpighiaceae 23
Mardiaania nudiflorum (L.) Bruek.
Marsdenia roylei Wight. 72
M.tenacissima W. & A. 72
Martynia annua Linn. 93

Maxillus acuminata D.Don. 104
Maconopsis aculeata Royle. 10
M.robusta Hook.f. & Thunb. 11
M.nipalensis DC. 9
Menspermaceae. 6
Megacarpaea polyandra Benth 13
Melastomaceae. 46
Melia azedarach Linn. 27
Meliaceae 26
Melothria heterophylla Cogn. 48
Mentha longifolia Huds. 85
Meriandra strobilifera Benth. 85
Michelia Champaca Linn. 23
Microstylis muscifera Ridley 104
Mimosaceae 40
Mimosa pudica Linn. 40
Mirabilis jalapa Linn.
Mollugo nudicaulis Lam. 54
Momordica charantia Linn. 48
Moraceae 99
Morina longifolia Wall ex DC. 58
Moringaceae 32
Moringa oleifera Lam. 32
Moraus alba Linn. 100
Mucuna imbricata DC. 36
Murdannia nudiflorum Breanan 110
M.prurita Hook 35
Murraya koenigii Spreng. 25
M.paniculata (Linn.) Jack. 25
Myricaceae 100
Myrica nagi Thunb. 100
Myrtaceae 47
Myrsine africana Linn. 67
Myrsinaceae 67
Nardostachys jatamansi DC. 57
Nepeta connata Royle 85
Nepata elliptica Royle ex Benth. 85
N.hindostana (Roth) Haines. 85
Nicotiana tabacum Linn. 77
Nicandra physaloides Gaertn. 77
Nomocharis nana F.H. 109
N.oxypetala (Royle) Balf. 109
Nyctaginaceae 87
Nyctanthes arbortristis Linn. 68
Oldenlandia coccinea Royle 55
O.corymbosa Linn. 55
Oleaceae 68
Olea Cuspidata Wall. DC. 69
Onosma echioides Linn. 75
O.emodi Wall. 75
Onagraceae 47
Orcidaceae 102
Orchis latifolia Linn. 104
Origanum vulgare Linn. 86
Oroxylum indicum Vent. 80
Osmanthus fragrans Lour 69
Osyris wightiana Wall. 94
Osbeckia stellata Wall 46
Ougenia dalbergioides Benth. 36
Oxalidaceae 24
Oxalis acetosella Linn. 24
O.corniculata Linn. 24
Oxyria digyna Hill 90
Paeonia emodi Wall ex Royle 5
Papaveraceae 10
Papaver somniferum Linn. 11
Paris polyphylla Smith
Parthenocissus Semicordiata Planch 29
Pavetta indica Linn. 55
Perilla frutescens (L.) Breft. 86
P.vulagaris Linn. 86
Periploca calophylla Falc. 72
Pergularia daemia Chiov 72
Peristrophe bicalyculata Nees 81
Pedicularis longiflora 29
Pedicularis bufida
Phaseolus calcaratus Roxb. 36
P.trilobus Ait. 36
Pholidota articulata Lindl. 104
P.imbricata Lindl. 105
P.imbricata Lindl.
Phyllanthus niruri Linn. 97
P.urinaria Linn. 97
Physalis angulata Linn. 77
Phytolaccaceae 17
Phytolacca acinosa Roxb. 17
Picea morinda Linn 112
Picrasma quassioides Benth. 26
Picrorhiza kurroa Royle ex. Benth. 79
Pimpinella diversifolia DC. 52

Pinaceae 111
Pinus griffithi M'clell. 112
P. roxburghii Sargent 112
Piper brachystachyum Wall. 92
P.longium Linn. 92
Pistacia integerrima Stew ex. Brandis 31
Plantaginaceae 87
Plantago major Linn. 87
Pleurospermum angelicoides Benth 53
P.stylosum Clarke 53
P.densiflorum Clarke 53
P.candolli Benth 53
Plumbago zeylanica Linn. 66
Plumbaginaceae 66
Podophyllum hexandrum Royle 9
Pogostemon pariviflorus Benth 86
Polycarpea corymbosa Lam. 16
Polygalaceae 15
Polygala chinensis Linn. 15
P.crotalarioides Ham. 15
P.tatarionowii Regel. 15
P.furcata Royle. 15
P.abyssinica R.Br. 15
P.persicariaefolia DC. 16
Polygonatum verticillatum Allioni 109
Polygonatum cirrihifolium Royle 109
Polygonaceae 90
Polygonum amplexicaule D.Don. 90
P.aviculare Linn. 90
P.chinense Linn. 90
P.recumbens Royle 91
P.rumicifolium Royle 91
P.viviparum Linn. 91
Polypodium amoenum Wall 114
Populus ciliata Wall. 102
Potentilla argyrophylla Wall. 41
P.fulgens Wall. 41
P.napalensis Hook. 42
Premna barbata Wall. 83
P.latifolia Roxb. 83
Prinsepia utilis Royle. 41
Primulaceae 66
Primula denticulata Sm. 67
Purnella vulgaris Linn. 86
Prunus. cerasoides D.Don 42
P.cerasus Linn. 42
P.cornuta (Wall.) Steud 42
P.persica Battsch 42
P.armeniaca Linn. 43
Pterospermum acerifolium Willd. 21
Pueraria tuberosa DC. 36
Punicaceae 47
Punica granatum Linn. 47
Putranjiva roxburghii Wall. 97
Pygmeopremna herbacea (Roxb.) Moldenke. 83
Pyrancantha crenulata Roem. 43
Pyrus lanata D.Don. 43
P.pashia Ham. 43
Quercus dilatata Lindl. 101
Q.incana Roxb. 101
Q.semecarpifolia Sm. 101
Randia dumetorum Lam. 56
R.tetrasperma Benth. & Hook. f. 55
Ranunculaceae 1
Ranuculus sceleratus Linn. 5
R.arvensis Linn. 5
R.pulchellus Mecy 5
R.laetus Wall. 5
Reinwardtia indica Dum. 22
Rhamnaceae 28
Rhamnus purpures Edgew 28
R.triqueter Wall. 28
R.virgatas Roxb. 28
Rheum emodi Wall. 91
R.moorcroftianum Royle 91
R.webbianum Royle 91
Rhododendron anthopogon D.Don. 66
R.arboreum Sm. 65
R.campanulatum D.Don. 65
R.lepidotum Wall. 66
Rhus parviflora Roxb. 31
R.punjabensis J.L.Stew.ex.Brand. 31
R.wallichii Hook.f. 32
Rubiaceae 54
Ribes rubrum Linn. 45
Ricinus communis Linn. 97
Rosaceae 40
Rosa moschata Herrm. 43
R.sericea Lindl. 43

Roscoea alpina Royle 105
R.procera Wall. 106
Rostellaria procumbens (Linn.) Ness. 81
Roylea calycina Briquet 86
Rubia cordifolia Linn. 56
Rubus ellipticus Sm. 44
R.paniculatus Smith. 44
Rumex hustatus D.Don. 92
R.nepalensis Spreng. 92
Rutaceae 24
Salicaceae 102
Salix alba Linn. 102
S.tetrasperma Roxb. 102
S.wallichiana Andess 102
Samydaceae 49
Salmalia malabarica Schott & Endl. 20
Santalaceae 94
Salvia lanata Roxb. 86
S.plebeia R.Br. 87
Sapotaceae 86
Saponaria vaccaria Linn. 17
Sapindaceae 30
Sapindus mukorossi Gaertn. 30
Sapium insigne Trimen 97
Sauraua napalensis DC. 18
Saussurea candicans C.B.Clarke 62
S.gossypiphora D.Don. 63
S.hypoleuca Spreng. 62
S.lappa C.B.Clarke 63
S.obvallata Wall. 62
Saxifragaceae 44
Scrophulariaceae 78
Sedum crassipes Hook.f. 45
S.multicaule Wall. 46
S.quadrifidum Pallas 46
S.rosulatum Edgew 46
Selinum tenuifolium Wall. 53
S.vaginatum Clarke 53
Scindapsus officinalis schoot 111
Senecio alatus Wall. 64
S.graciliflorus DC. 64
Silene cucubalus Wibel. 16
S.gallica Linn. 17
S.conoidea Linn. 17
S.thomsonii Majumdar 17
Sida acuta Burm. 20
S.cordifolia Linn. 19
S.rhombifolia Linn. 20
S.cordata Burm.f 20
Siegesbeckia orientalis Linn 63
Sisymbrium strictum Hook.f. 14
S.Wallichii Hook. 14
S.sopia Linn 14
Smarubaceae 26
Skimmia laureola Sieb. & Zucc. ex Walp. 25
Smilex aspera Linn. 109
Solanaceae 76
Solanum indicum Linn. 77
S.khasianum Clarke 77
S.melongena Linn. 78
S.nigrum Linn. 78
S.surattense Burm.f. 78
S.torvum Swartz. 78
Smilax aspera Linn. 109
Solidaga virga-aurea Linn. 64
Sonchus arvensis Lindl. 63
S.asper Vill. 64
S.olerasecus Linn. 63
Sorbaria sorbifolia A.Br. 44
Sopubia delphinifolia D.Don. 79
Sphaeranthus indicus Linn. 64
Spondias mangifera Willd. 32
Staphyleaceae 31
Staphylea emodi Linn. 31
Stellaria aquatica Scop 16
S.medica Linn. 16
S.paniculata Edgw. 16
S.semivestita Edgew. 16
S.latifolia Benth 16
Stephania glabra Miers. 7
S.elegans Hook.f. 7
S.hernandifolia Walp 7
Sterculiaceae 20
Sterculia villosa Roxb. 21
Striga asiatica (Lour) O.Ktze. 79
Strobilanthes auriculatus Nees. 81
Swertia alata Royle ex. D.Don. 73
S.angustifolia Ham 73
S.chirata Buch.-Ham. 73
S.cordata Wall 73

Symplocos chinensis (Lour) Dusee. 67
Syringa emodi D.Don. 69
Syzygium jambos (Linn) Alst. 47
Tamaricaceae 18
Tamarix dioica Roxb. 18
Taraxacum officinale Webber. 64
Taxaceae 113
Taxus baccata Linn. 113
Termnus labialis Spreng 37
Tephrosia purpurea (Linn.) Pers 36
Terminalia belerica Roxb. 50
T.chebula Retz. 50
Tiliaceae 21
Trimufetta rhomboides Jacq 21
Thalictrum foliolosum DC. 5
T.minus Linn. 6
T.reniforme Wall. 6
T.cultatum Wall. 6
T.rostellatum Hook. 6
T.javanicum Blume 6
Thymelaeaceae 93
Thymus serphllum Linn 87
Typhonium diversifolium Schott 111
Tinospora cordifolia (Willd) Miers. 8
T.malabarica (Lam.) Miers. 8
Toddalia asiatica Lam. 26
Toona serrata (Ryle) M.Roem. 26
Trachelosperum fragrans Hook.f. 70
Trachyspermum falconeri Woolf 53
Trewia polycarpa Benth 97
Trichodesma indicum R.Br. 75
Trigonella gracilis Benth 37
T.pubescens Edgw.
Trichosanthes bracteata (Lam.) Voigt. 49
T.cucumerina Linn. 49
Tridax procumbens Linn.
Trifolium pratense Linn. 37
T.repens Linn. 37
Trigonella corniculata Linn. 37
T.gracilis Benth 37
T.pubescens Edgew 37
Triumfetta rhomboidea Jacq. 21
Ulmaceae 98
Ulmus walliachina Planch. 98
Uraria lagopoides DC. 37
U.picta Desv. 37
Urginea indica Kunth. 109
Urena lobata Linn. 20
Urticaceae 100
Urtica dioica Linn. 100
Valerianaceae 57
Valeriana hardwickii Wall 57
V.jatamansi Jones 57
Vallaris solanacea O.Ktze. 70
Vanda cristata Lindl.
V.pariviflora Lindl.
Verbenaceae 81
Verbascum thapsus Linn. 80
Verbena officinalis Linn. 82
Veronia cinerea Less. 65
Ventilago calyculata Tulasne. 28
Veronica anagallis Linn. 79
Viburnum continifolium D.Don 56
V.foetens Dcne. 56
V.nervosum D.Don 57
Violaceae 14
Viola biflora Linn. 14
V.serpens Wall 14
Viscum album Linn. 94
V.nepalense Spreng 94
Vitex negundo Linn. 83
Vitaceae 29
Vitis lanata Roxb. 29
Wattakaka volubilis (Linn.) Stapf.
Wenlandia exserta DC. 56
Withania somnifera Dundl. 78
Woodfordia fruticosa Kurz. 47
Wrightia tomentosa Roem. & Schult. 70
Xanthium strumarium Linn. 65
Zanthoxylum alatum Roxb. 26
Zizyphus juguba Lam. 29
Z.xylopra Willd. 29
Z.oxphylla Edgew. 29
Zingiberaceae 105

CHARAKA'S CLASSIFICATION OF DRUGS

50 Groups (Vargas)

1. Promoting Life **Jeevaneeyam**

   Jivaka, Rishabhaka, Meda, Mahaamedaa,. Kaakoli, Ksheerakaakoli, Maashaparni, Mudgaparni, Jeevanti, Yastimadhu.

2. Promoting Growth **Brimhaneeeyam**

   Ksheerini, Raajakshavaka, Bala, Kaakoli, Ksheerakaakoli, Vatyaayani, Bhadroudani, Bhaaradwaaji, Payasyaa, Rishyagandhaa.

3. Reducing Growth **Lekhaniyam**

   Mustaa, Kushta, Haridraa, Vachaa, Daaruharidraa, Ativishaa, Katukarohini, Chitraka, Karanja, Haimavati.

4. Promoting Evacuation **Bhedaneeyam**

   Trivrit, Arka, Eranda, Agnimukhi, Danti, Chitramula, Chiribilwa, Sankhini, Katukarohini, Brahmadandi.

5. Promoting Union **Sandhaaneeyam**

   Yastimadhu, Guduchi, Prisniparni, Ambashtaa, Samangaa, Mocharasa, Dhaataki, Lodhra, Priyangu, Katphala.

6. Promoting Appetite **Deepaneeyam**

   Pippali, Pippalimoola, Chavya, Chitraka, Sunthi, Amlavetasa, Maricha, Ajamodaa, Bhallaathakaasthi, Hingu.

7. Promoting Strength **Balyam**

   Indravaaruni, Vrishabha, Sataavari, Maashaparni, Vidaari, Aswagandhaa, Sthiraa, Rohini, Balaa, Atibalaa.

8. Promoting Complexion **Varnyam**

   Chandana, Tunga, Padmaka, Useera, Yashtimadhu, Manjistaa, Saaribaa, Ksheera-Kaakoli, Sitaa, Lataa.

9. Promting Voice **Kanthyam**

   Saaribaa, Ikshumoola, Yastimadhu, Pippali. Draakshaa, Vidaari, Kaayaphala, Hamsapadi, Brihati, Khantakaari.

10. Promoting Happy feeling **Hridyam**

    Aamra, Aamraataka, Lakucha, Karamarda, Vrikshaamla, Amlavetasa, Kuvala, Badara, Daadima, Maatulunga.

11. Destroying Satisfaction **Triptighnam**
Sunthi, Chitramoola, Chavya, Vidanga, Murva, Guduchi, Vachaa, Musta, Pippali, Patola.

12. Destroying Piles **Arsoghnam**
Kutaja, Bilwa, Chitraka, Sunthi, Ativisha, Harithaki, Dhanvayaasaka, Daaruharidra, Vachaa, Chavya.

13. Destroying Skin Diseases **Kustaghnam**
Khadira, Harithaki, Aamalaki, Haridraa, Bhallaathaka, Saptaparna, Aaragwadha, Karaveera, Vidanga, Jaathi Pravaala.

14. Destroying Itching **Kandughnam**
Chandana, Jataamaamsi, Aaragwadha, Naktamaala, Nimba, Kutaja, Sarshapa, Yastimadhu, Daaruharidra, Mustaa.

15. Destroying Parasites **Krimighnam**
Sigru, Maricha, Gandira, Kebuka, Vidanga, Nirgundi, Kinihi, Gokshura, Bhaarngi, Aakhuparnika.

16. Destroying Poison **Vishaghnam**
Haridraa, Manjistaa, Raasnaa, Sukshmaila, Syaamaa, Chandana, Kathaka, Sireesha, Sindhuvaara, Sleshmaataka.

17. Producing Milk **Sthanyajananam**
Virana, Saali, Shastika, Ikshumoola, Kusamoola, Darbhamoola, Kaasamoola, Gundra, Utkatamoola, Katrinamoola.

18. Purifying Milk **Sthanyasodhanam**
Paathaa, Sunthi, Devadaaru, Mustaa, Murvaa, Guduchi, Kutajabeeja, Bhunimba, Katukarohini, Saaribaa.

19. Producing Sperm **Sukrajananam**
Jivaka, Rishabhaka, Kaakoli, Ksheerakaakoli, Mudgaparni, Maashaparni, Medaa, Sattaavari, jataamaamsi, Karkatakasringi.

20. Purifying Sperm **Sukrasodhanam**
Kushta, Elavaaluka, Katphala, Samudraphena, Kadambaniryaasa, Ikshukanda, Ikshuraka, Vasuka, Useera.

21. Promoting Lubrication **Smehopagam**
Draakshaa, Yastimadhu, Guduchi, Medaa, Vidaari, Kaakoli, Ksheerakaakoli, Jivaka, Jivanti, Saalaparni.

22. Promoting Sweet **Sedopagam**
Sigru, Erandamula, Arka, Vrischira, Punarnava, Yava, Tila, Kuluttha, Maasha,

Badariphala.

23. Promoting Vomiting **Vamanopagam**
Madhu, Yastimadhu, Kovidaara, Karbudaara, Neepa, Vidula, Bimbi, Sanapushpi, Arka, Pratyakpushpi.

24. Promoting Purgation **Virechanopagam**
Draakshaa, Kaasmari, Parushaka, Abhayaa, Aamalaki, Vibheethaki, Kuvela, Badara, Karkandhu Pilu.

25. Useful for Non-oily Enemata **Aasthaapanopagam**
Trivrit, Bilwa, Pippali, Kushta, Sarshapa, Vachaa, Kutajabeefa, Satapushpaa, Satapushpaa, Yastimadhu, Madanaphala.

26. Useful for Oily Enemata **Anuvaasanopagam**
Raasnaa, Devadaaru, Bilwa, Madanaphala, Satapushpaa, Punarnavaa, Vrischeera, Gokshura, Agnimantha, Syonaka.

27. Purging Doshas in the Head **Sirovirechaniyam**
Jyotishmati, Kshavaka, Maricha, Pippali, Vidanga, Sigru, Sarshapa, Apaamaarga, Sweta, Mahaaswetaa.

28. Controlling Vomitting **Chardinigrahanam**
Jambu, Aamrapallava, Maadiphala, Badara, Daadima, Yava, Yastimadhu,Useera, Mrith, Laaja.

29. Controlling Thirst **Trishnaanigrahanam**
Sunthi, Dhanvayaasa, Mustaa, Parpataka, Chandana, Bhunimba, Guduchi, Useera, Dhaanyaka, Patola.

30. Checking Hiccough **Hiccaanigrahanam**
Sati, Pushkaramoola, Badarabeeja, Kantakaari, Brihati, Vriksharuha, Harithaki, Pippali, Duraalabhaa, Karkatakasringi.

31. Reducing Faecal Matter **Purisha Sangrahaneeyam**
Priyangu, Ananthaa, Aamraasthi, Katwanga, Lodhra, Mocharasa, Samangaa, Dhaataki, Baarngi, Padmakesara.

32. Pruifying Faecal Matter **Purisha Virajaneeyam**
Jambu, Sallakitwak, Kachchura, Yastimadhu, Mocharasa,Devadaaru-niryaasa, Bhrustamrit, Payasyaa, Utpala, Tilakana.

33. Reducing Urine Mootra **Sangrahaneeyam**
Jumbu, Aamra, Plaksha, Vata, Kapitana, Udumbara, Aswattha, Bhallathaka, Asmanthaka, Somavalka.

34. Purifying Urine **MootraVirajaneeyam**
    Padma, Utpala, Nalina, Kumuda, Sougandhika, Pundareeka, Satapatra, Madhuka, Priyangu, Dhaathaki-pushpa.

35. Increasing Urine **Mootra Virechneeyam**
    Vrikshaadani, Swadamstra, Vasuka, Suryaavarta, Paashaanabhedi, Darbha, Kusa, Kaasa, Mustaa, Utkatamoola.

36. Relieving Cough **Kaasahara**
    Draakshaa, Harithaki, Aamalaki, Pippali, Duraalabhaa, Karkatasringi, Kantakaari, Punarnavaa, Taamalaki, Vruschira.

37. Relieving Dyspepsia **Swaasahara**
    Sati, Pushkaramula, Amlavetasa, Elaa, Hingu, Agaru, Surasaa, Taamalaki, Jeevanti, Chandana.

38. Relieving Swelling **Swayathuhara**
    Paatala, Agnimandha, Syonaka, Bilwa, Kaasmari, Kantakaari, Brihati, Saalaparni, Prisniparni, Gokshura,Dasamoola.

39. Relieving Fever **Jwaraharam**
    Saaribaa, Sarkaraa, Paathaa, Manjistaa, Draakshaa, Peelu, Parushaka, Harithaki, Aamalaki, Vibheethaki.

40. Relieving Exhaustion **Sramaharam**
    Draakshaa, Kharjura, Piyala, Badara, Daadima, Phalgu, Parushaka, Ikshu, Yava, Shastika.

41. Relieving Burning Sensation **Daahaprasamanam**
    Laaja, Chandana, Kaasmari, Madhuka, Sarkaraa, Neelotpala, Useera, Saaribaa, Guduchi, Hribera.

42. Relieving Cold **Seethaprasamanam**
    Tagara, Agaru, Dhaanyaka, Sringabera, Ajmadaa, Vachaa, Kantakaari, Agnimandha, Syonaaka, Pippali.

43. Relieving Rashes **Udardaprasamanam**
    Tinduka, Piyaala, Badara, Khadira, Kadara, Saptaparna, Aswakarna, Arjuna, Asana, Irimeda.

44. Releiving Bodily Pains **Angamardaprasamanam**
    Vidaarigandhaa, Prisniparni, Brihati, Kantakaari, Eranda, Kaakoli, Chandana, Useera, Elaa, Madhuka.

45. Releiving Colic **Sulaprasamanam**
    Pippali, Pippalmoola, Chavya, Chitraka, Sunthi, Maricha, Ajamodaa, Ajagandha, Jeeraka, Gandeera.

46. **Restoring Blood Sonitaasthaapanam**
Madhu, Madhuka, Kunkuma, Mocharasa, Loshta, Lodhra, Gairika, Prenkhana, Sarkaraa, Laaja.

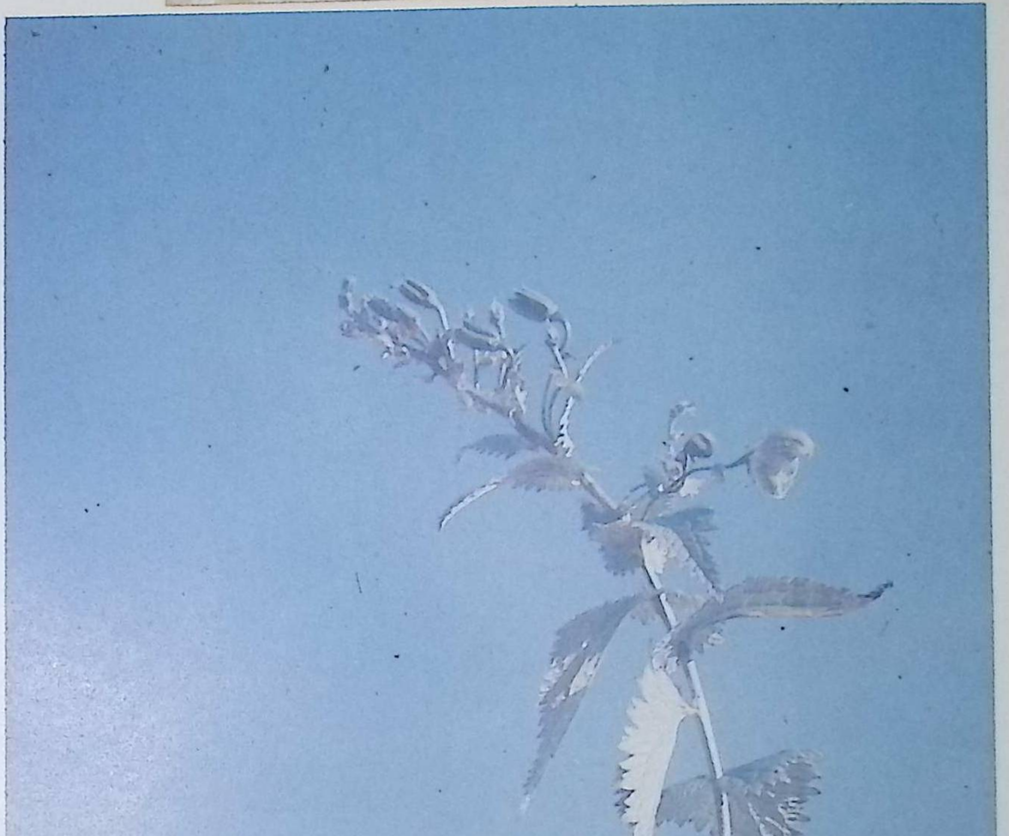
47. **Relieving Sufferings Vedanaasthaapana**
Arjuna, Katphala, Kadamba, Padmaa, Kumuda, Mocharasa, Sirisha, Vanjula, Elaavaluka, Asoka.

48. Restoring Consciousness **Samgnaasthaapana**
Hingu, Katphala, Irimeda, Vachaa, Sati, Braahmi, Golomi Jataamaamsi, Guggulu, Katurohini.

49. Fixing pregnancy **Prajaasthaapana**
Indravaaruni, Braahmi, Durvaa, Swetadurva, Paatali, Aamalaki, Harithaki, Katurohini, Balaa, Prenkhana.

50. Fixing Youthfulness Vayasthaapana
Guduchi, Harithaki, Aamalaki, Raasna, Swetaa, Jeevanti, Sataavari, Braahmi, Sthiraa, Punarnavaa.

Medicinal Plants of
Garhwal Himalayas



Aconitum Heterophyallum 'wall (Ativisha)

SUSRUTA'S CLASSIFICATION OF DRUGS (38 GROUPS (GANAS)

1. **Vidaarigandhaadigana**

Vidaarigandhaa (Saalaparnee), Vidaaree, Viswadevaa (Gaangerukee), Sahadeva (a variety of Balaa), Swedamshtraa (Gokshura), Prithaakparnee (Prisniparnee), Sataavaree, Saaribaa, Krishna Saaribaa, Jeevaka and Rishabhaka, Mahaasahaa (Maasshaparnee), Kshudasahaa (Mudgaparnee), Brihatee, Kantakaaree, Punarnavaa, Eranda, Hamsapaadi, Vrischikaalee and Rishabhee.

The Vidaarigandhaadigana counteracts Vaata and Pitta; it is useful in Sosha (emaciation) Gulma (tumour), Angamarda (bodily soreness), Oordhwaswaasa (a kind of Swaasa) and Kaasa (cough).

2. **Aaragwadhaadigana**

Aaragwadha, Madana, Gopaghonta (Karkotee), Kantakee (Vikamkata), Kutaja, Paathaa, Paatalaa, Moorvaa, Indrayava, Saptaparna, Nimba, Kurantaka, Daaseekurantaka, Gudoochee, Chitraka, Saarngeshtaa (Kaakajanghaa), Karanja and Vitapakaranja, Patola, Kiraatatiktaka and Sushavee (Kaaravella).

The Aaragwadhaadigana checks Kapha and poison; it is also useful in Prameha, Kushta, Jwara, Vami (Vomitting), Kandu (Itching) and it purifies Vrana (Dushta).

3. **Varunaadigana**

Varuna, Aartagala (Kakubha) , Sigru, Madhusigru, Tarkaaree, Meshasringee, (Karkatasringee), Pooteeka (Chiribilva), Naktamaala (Brihat Karanja), Morata (Ankolapushpa), Agnimantha, two kinds of Saireyaka (of red and blue flowers), Bimbee, Vasuka (Buka), Vasira (Markatapippalee), Chitraka, Sataavari, Bilwa, Ajasringee (Chagalavishanikaa), Darbha (Kusa), Brihatee and Kantakaari.

This Varunaadigana checks Kapha and Medas; it is also useful in headache, Gulma, and Aabhyantara vidradhi (internal abscess).

4. **Veeratarwaadigana**

Veerataru (Savara), two kinds of Sahachara, Darbha, Vrikshaadanee, Gundraa (Paadaraka bhedah), Nala, Kusa, Kaasa, Asmabhedaka, Agnimandha, Morataa (Ankola-pushpa), Vasuka, Vasira, Bhallooka, Kurantaka, Indeevara, Kapotavankaa, and Swadamshtra, (Gokshura).

The Veerataraadigana checks vaata diseases. It is useful in Asmaree (Stone), Sarkaraa (Sand in urine etc.)

Mootrakrichra (painful passage of urine), Mootraaghaata (retention of urine etc.) Ruja (a kind of pain connected with passing of urine).

5. **Saalasaaraadigana**

Saalasaara, Ajakarna (Sarja), Khadira, Kadara (Swetasaara), Kaalaskandha, Kramuka (Pooga), Bhoorja, Meshasringa (Karkatasringi), Tinisa (Syandana), Chandana, Kuchandana, Simsapaa, Sireesha, Asana (Beejaka), Dhava (Sakata), Arjuna (Kakubha) Taala, Saaka, Naktamaala, Pooteeka, Aswakarna, Agaru and Kaaleeyakam (Daaru-haridraa).

This gana is very helpful in kushta. It also acts as a curative in Prameha, Paandu (anaemia) and lessens Kapha and medas.

6. Rodhraadigana

Rodhra, Saavaralodhra, Palasa, Kutannata, Asoka, Phanjee (Bhaarngee), Katphala, Elaavaalukam, Sallakee, Jinginee, Kadamba, Saala and Kadalee.

The Rodhraadigana lessens Medas and Kapha; it is curative of Yoni Dosha (disorders of Yoni); it is astringent (Stambhee), develops complextion (Varnya), and mitigates the poisons (Vishvinaasana).

7. Arkaadigana

Arka, Alarka (Sweta Arka), Karanja, Vitapakaranja, Naagadantee, Mayooraka (Apaamaarga), Bhaargee, Raasnaa, Indrapushpee, Kshudra Swetaa (Sephanda), Mahaaswetaa, Vrischikaalee, Alavanaa (Jyotishmatee) and Taapasa Vriksha (Inguda).

The Arkaadigana checks kapha, Medas and Visha; it is helpful also in Krimi, Kushta and is chiefly a purificator of Vranas (Viseshaat Vrana Sodhanah).

8. Surasaadigana

Surasaa (Krishna Tulasee), Sweeta Surasaa (Sweta Tulasee), Phanijjaka (Maruvaka), Arjaka (Swetakutheraka), Bhoosthrina (Angudaaka), Sugandhaka (Dronapushpa), Sumkha (Raajikaa), Kaalamaala (Krishnamallikaa), Kaasamarda, Kshavaka ('Chinkini'), Kharapushpaa (Kshavakabhedah), Vidanga, Katphala, Surasee ('Bilwanasee'),Nirgundee, Kulaahala (Mundikaa), Undurukarnika (Mooshikakarnikaa), Phanjee (Bhaargee), Praacheebala (Matsyaakshaka), Kaakamaachee and Vishnumustika.

Suraasadigana checks Kapha and destroys Krimees (parasites); it is also usefull in cold, loss of appetite, hardbreathing and cough; it purifies (Dushta) Vrana.

9. Mushkakaadigana

Mushkaka (Kshaaravriksha), Palaasa (Kinsuka), Dhava, Chitraka, Madana, Vrikshaka (Kutaja), Simsapaa, Vajravriksha and Thriphala (Hareetaki, Vibeetaki and Aamalaki).

Mushkaadigana reduces Medas and is useful in Sukradosha (impurity of Semen); it also acts as a curative in Prameha, Arsas, Paanduroga and sarkara.

10. Pippalyaadigana

Pippalee, Pippaleemoola, Chavya, Chitraka, Sringabera (Sunthee), Maricha, Histipippalee (Gajapippalee), Harenuka, Elaa, Ajamodaa,, Indrayava, Paathaa, Jeeraka, Sarshapa, mahaanimbaphala, Hingu, Bhaarngee, Madhu-rasaa (Moorvaa), Ativisha, Vachaa, Vidangaa and Katurohinee.

Pippalyaadigana reduces Kapha Dosha, cold (Pratisyaaya), Vaata, anorexia, Gulma, and pain (soola); it creates appetite (deepana) and digests (resolves) Aama- Dosha (Aama Paachana).

11. Elaadigana

Ela, Tagara, Kushta, Maamsee, Dhyaamaka, (Mattrina) Twak, Patra (Patrakam), Naagapushpa (Naagakesara), Priyangu, Harenuka, Vyaaghranakha, Sukti, (Vyaaghranakhabheda), Chandana, Sthouneyaka, (thuneraka), Sreeveshtaka (Saraladruma), Chocha, Choraka, Vaaluka, Guggulu, Sarjarasa, Turushka (Sihlaka), Kunduraka (Sallakee Chopa), Agaru, Sprukkaa, Useera, Bhadrudaaru, Kunkumam and Punnaagakesara.

Elaadigana checks Vaata and Kapha and Visha (poison); It creates lustre of the skin (Varna prasaada) ; it destroys itching (Kantoo), Pidakaa (Diseases with elevated skin on account of an abscess etc.) and Kotha (eruption on skin).

12. Vachaadigana

Vachaa, Mustaa, Ativishaa, Abhayaa, Bhadradaaru and Naagakesara constitute vachaadigana

13. Haridraadigana

Haridraa, Daaruharidraa, Kalasee, (Prisniparnee), Kutajabeej and Yastimadhu constitute Haridraadigana.

Both Vachaadigana and Haridraadigana purify the breast-milk acts as amelioratives (Samana) in Aamaateesaara; they are especially digestives of the Dosha as (Viseshaat Doshapaachanou).

14. Syaamaadigana

Syaama (Sweta Trivrut), Mahaasyaama (Vriddha-daaraka), Trivrut (having red root), Dantee, Sankhinee (Yavatiktabhedah), Tilvaka (Rodhra), Kampillaka (Rochanikaa), Ramyaka (Mahaanimba), Kramuka, Putresrenee, Gavakshee, Raajavriksha, Karanja, Vitapakaranja, Gudoochi, Saptala (Snuheebheda), Chagalaantree, (Vriddhadaarakabheda) , Sudhaa (Sehunda) and Suvarnaksheeri.

Syaamaadigana checks Gulma and Visha (poison). Aanaaha (Distension of abdomen), Udara, and Udaavarta; it caused free evacuation of the bowels.

15. Brihatyaadigana

Brihatee, Kantakaarika, Kutajaphala, Paathaa and Madhukam (Yasthimadhu).

Brihatyaadigana is a digestive (Paachaneeya); it checks vaata and Pitta. It is also beneficial in Arochaka (Anorexia) due to Kapha, Hridroga, Mootrakrichra (Dysuria) with a kind of pain during urination.

16. Patolaadigana

Patola, Chandana, Kuchandana (Raktachandana), Moorvaa, Gudooche, Paathaa and Katurohinee.

Patolaadigana cures Pitta, kapha and Arochaka (anorexia); it allays Jwara; it is beneficial in Vranas and cures vomitting; itching and Visha (Poison).

17. Kaakolyaadigana

Kaakolee, Ksheerakaakolee, Jeevaka, Rishabhaka, Mudgaparnee, Maashaparni, Medaa, Mahaamedaa, Chinnaruhaa (Gudoochee), Karkatasrin Tugaaksheeree (Vamsa-lochanaa), Padmaka, Papoundareeka, Riddhi, Vriddhi, Mridweeka (Draakshaa), Jeewantee and Madhukam.

Kaakolyaadigana cures Pittasonita (Rakta vitiated by pitta; or Pitta and Sonita) and Vaayu. It is Jeevana (increases vitality), Brimhana (Promotes bodily growth), Vrishya (increases semen), and increases breast-milk and Kapha.

18. Ooshakaadigana

Ooshaka (Kshaaramrittika), Saindhavalavana, Silaajathu, Kaaseesadwaya (Vaalukaaseesam and Pushpakaa-seesam), Hingu and Tuththaka.

Ooshakaadigana allays Kapha and diminishes Medas; it acts as curative in Asmaree (stone), Sarkaraa (stand in urine), Mootrakrichchra and Gulma.

19. Saaribaadigana

Saaribaa, Madhuka (Yashtimadhu), Chandana, Kuchandana (Rakhtachandana), Padmaka, Kaasmareephala, Madhookapuspha and Useeram.

Saaribaadigana allays thirst and Raktrapitta. It is beneficial in Pittajwara and cures daaha (burning sensation) especially.

20. Anjanaadigana

Anjana (Souveeraanjanam), Rasaanjanam, Naaga-puspha (Naagakesaram), Priyangu, Neelotpala, Nalada (Maamsee), Nalinakesa(Padmakesara) and Madhukam.

This Gana cures Raktapitta; it is beneficial in Visha (poisoning), and it allays internal burning sensation.

21. Parooshakaadigana

Parooshakaa, Draakshaa, Katphala, Daadima, Raajaadana (Ksheerika), Katakaphala and Saakaphalas (fruits of a tree named Saaka). (Fruits of all the above drugs should be used).

Parooshakaadigana cures Vaata and disorders urine; it is pleasant to take (Hridya); it allays thirst and creates appetite.

22. Priyangwaadigana

Priyaangu, Samangaa (Anjali-Kaarikaa of Lajjalu), Dhaatakee, Punnaaga (Tunga), Naagapusphpam, Chandanam, Kuchandanam, Morcharasa (Saalimali chupa), Rasaanjana, Kumbheeka, Srontonjana Padmakesara, Yojanavalli (Manjishta) and Deerghamoolaa. (Duraalabhaa).

23. Ambashtaadigana

Ambashtaa (Machikaa), Dhaatakikusuma, Samangaa (Lajjaalu), Katvanga (Araluka), Madhuka, Bilwapesikaa (Baala Bhilwagirah), Saavaraprodhra (Lodhra), Palaasa, Nandeevriksha (Kaasmaree) and Padmakesaram.

Both Priyangwaadigana and Ambashtaadigana are useful in Pakswaateesara. They cause Sandhaana (union of bones etc.) are beneficial in Pitta and heal the Uclers (Vranaanam chaapi Ropanou).

24. Nyagrodhaadigana

Nyagrodha (Vata), Udumbara, Aswattha, Plaksha, Madhuka, Kapeethana (Aamraataka), Kakubha, Aamra, Kosaamra, Chorakapatra (Laakshaavrikshaa), Jamboodwaya (Raajajamboo) and Kaakajamboo-Swalpaphala), Piyaala (Saaradruma), Madhooka (Gudapushpa), Rohinee (Katphala), Vanjula (Vetasa), Kadamba, Badaree, Tindukee (Tinduka Vriksha), Sallakee, Rodhra, Saavararodhra, Bhallaataka, Palaasa and Nandeevrisha.

Nyagrodhaadigana is beneficial in the treatment of Vranas (Vranyah); it is astringent (Sangraahee); it is useful in fractures (Bhagna Sandhaana). Further, it allays Raktapitta (Haemorrhage) and Daaha (burning sensation), it reduces Medas (Obesity) and it is useful in Yonidosha (Yonivyaapat).

25. Gudoochyaadigana

Gudoochi, Nimba, Kustumburu (Dhaanyakam), Chandanam and Padmakam.

Gudoochyaadigana checks all Jwars (fevers) and it increases appetite (Deepana). It allays Hrillaasa (Nausea accompanied with hawking of mucuos etc. from the mouth). Arochaka (Anorexia), Vami (Vomiting), thrist and burning sensation.

26. Utpalaadigana

Utpala (Neelotpala), Raktopala, Kumuda (Swetot-pala), Sougandhika (a sweet-scented blue lily different from Neelotpala), Kuvalaya (Utpala having blue-white colour), Pundareeka (White lotus and Madhukam (Yashtri-madhu).

Utpalaadigana allaya daaha (burning sensation), Pitta and Rakta, Thirst, Visha (Poisoning), Hridroga, Chardi (Vomiting) and Moorchaa (Syncope).

27. Mustraadigana

Mustaa, Haridraa, Daaruharidraa, Hareetakee, Aamalaka, Vibheetaka, Kushta, Haimavatee (Vachaa), Paathaa, Katurohinee, Saarngeshtaa (Yavatikaa), Ativishaa, Draavidee (Elaa) Bhallaataka and Chitraka.

Mustakadigana reduces Kapha; it also cures Yoni-dosha and purifies breast-milk; it is digestive (Paachana).

28. Triphalaa

Hareetakee, Aamalaka and Vibheetaka, Thriphala reduces Kapha and Pitta; it is useful in Prameha, Kushta; it is beneficial to eyes; it creates appetite and is useful in Vishamajwara.

29. Trikatukam

Pippalee, Marichaa and Sringabera (Sunthee).

This is also called tryooshanam and Vyosha. It redices Kapha and Medas and is useful in Prameha, Kushta, Twagaamaya (skin diseases) it creates appetite; it is useful in Gulma, Peenasa and Agnyalpataa (Poor digestion).

30. Aamalakyaadigana

Aamalakee, Hareetakee, Pippalee and Chitraka.

This Aamalakyaadigana is useful in all jwaras (fevers) is beneficial to eyes, is an aphrodisiac and cures Kaphaa-rochaka (Anorexia due to Kapha).

31. Trapwaadigana

Trapu (Vangam-Tin), Seesa (Lead), Taamra (Copper), Rajata (Silver), Krishna Loha (Steel), Suvarna (Gold) and Lohamala (Mandoor).

Trapwaadigana is useful in gara (poisoning usually through worms (Krimi), thirst, Visha, Hridroga, Paandu and Prameha.

32. **Laakshaadigana**

Laakshana, Aarevata, (Kiramaalaka), Kutaja, Aswa-maaraka (Karaveera), Kathphala, Haridraa, and Daaru-haridraa, Nimba, Saptachchada, Maalatee and Traayamaanaa.

Laakshaadigana is Kashaaya (astringent), bitter and sweet in taste, reduces ailments due to Kapha and Pitta; it is useful in Kushta and Krimi (worms); it also purifies Dushta vranas.

33. **Kaneeyahpanchamoola** (or Hraswapanchamoolam or Laghupanchmool)

Trikantaka (Gokshura), Brihatee, Kantakaari, Pithakparnee and Vidaarigandhaa (Saalaparni)

Kaneeyahpanchamoola is Kaashaaya, Tikta and Madhura in Rasa (taste); it reduces Vaata and ameliorates Pitta; it is Brimhana (tissue building) and increases strength (Balavardhanah).

34. **Mahaapachmoola** (Brihat Panchamoola).

Bilwa, Agnimandha, Tuntuka (Syonaaka), Paatala and Kaasmaree.

Mahaa Panchamoolam is bitter (tikta), checks kapha and Vaata it is Laghu in Paaka; it promotes appetite and it is slightly sweet in Rasa (Taste).

35. **Dasamoola**

Both the above Panchamoolas (i.e.) Kaneeyah panchamoola and Mahaa Panchamoola mixed are called Dasamoola.

Dasamoola (Gana) reduces swaasa (hard breathing), it checks Kapha, Pitta and Vaayu; it digest Aama-Dosha and it is curative of all jwaras (fevers).

36. **Valleepanchamoola**

Vidaaree, Saaribaa, Rajanee (Haridraa), Gudoochee and Ajasringi.

37. **Kantakapanchamoola**

Karmarda, Trikantaka (Gokshura), Saireeyaka, Sataavaree and Gridhranakee.

Both the above ganas (Valee Panchamoola and Kantaka Panchamoola) are beneficial in Raktapitta and are useful in three kinds of Sopha (Aama, Pachyamaana and Pakwa), Prameha and purify Sukra.

38. **Trinapanchamoola**

Kusa, Kaasa, Nala, Darbha and Kaandekshuka.

This Trina Panchmoola cures disorders of urine (Mootra Dosha), Raktapitta when it is used especially with milk. Laghupanchamoola and Mahaapanchamoola usually reduce Vaata Trinapanchamoola reduces Pitta; the other two, namely, Valleepanchamoola and Kantaka Pachaa-moola, reduce Kapha. It should be understood that the substances in the groups (Ganas) may be altered, or individually used and variously combined according to the Doshaas, or Dooshyas etc. existing individually or in various combinations in a person.

Vaagdhata's Classification of Drugs (32 Groups) (GANA)

1. **Vamanaoushadhagana** (Emetics)

Madana, Madhuka (Yashtimaadhu), Lambaa (Tumbee), Nimba, Bimbee, Visaalaa (Indravaarunee), Trapusa, Kutaja, Moorvaa, Devadaalee, Krimighna (Vidangam), Vidula (Jalavetasa), Dahana (Chitraka), Chitraa (Mooshikaparnee), Kosavatyou (Ghantaalikaa, and Dhaamaargava), Karanja, Kanaa (Pippalee), Lavana (Saindhavalavana), Vachaa, Elaa, and Sarshapa are used as emetics.

2. **Virechanaoushdhagana** (Purgatives)

Nikumbha (Dantee), Kumbha (Trivruth), Thriphalaa, Gavaakshee (Visaalaa), Snuk, Sankhinee (Yavatiktaa), Neelinee, Tilwaka (Rodhra), Samyaaka (Aaragwadha), Kampillaka, Hemadughaa, (Swarnaksheeree), Dugdham (Milk), Mootram (Urine of cow etc.) are used as purgatives.

3. **Niroohana Dravyagana**

Madanaphala, Kutaja (Twak), Kushtam, Devadaalee, Madhukam, Vachaa, Dasamoola, Daaru (Devadaaru), Raasnaa, Yava, Misi (Satapushpaa), Kritavedhanam (Dhaamaargava), Kuluttha (Madhu honey), Lavanam (Saindhavam) and Trivruth are useful as ingredients of Niroohavasti.

4. **Seershavirechaneeyagana**

Vella (Vidanga), Apaamaarga, Vyosha (Trikatukam), Daarvee (Daaruharidraa), Suraalaa, (Sreshta Sarjarasa), Saireeshabeeja, Baarhatabeeja (Brihatibeeja), Saigravam-beejam (Sigrubeeja), Maadhooka Saara (Madhupushpasaara), Saindhavam, Taarkshysailam (Sushkarasaanjanam), Trutyou (Sookshma Elaa and Sthoola Ela) and Prithveekaa (Hingupatree) are used for Seershavirechana (Sodhana Nasya).

5. **Vaataharaganas**

Bhadradaaru, Natam (Tagaram), Kushtam, Dasamoolam and Balaadwaya (Balaa and Atibala) constitute Bhadradaawaadigana. The Bhadradaarwaadigana, Veeratarwaadigana and the Vidaaryaadigana (both of which follow) check Vaayu.

6. **Pittaharaganas**

Doorwaa, Anantaa (Yavaasa), Nimba, Vaasaa, Aatma-guptaa (Kapikachchu), Gundraa (Padayerakah), Abheeru (Sataavaree), Seetapaakee (Kaakanantikaabheda) and Priyangu (Syaamaa) constitute Doorwaadigana which checks Pitta. So also Nyagrodhaadi Gana, Padmakaadi Gana and Dwe Sthire (Saaliparnee and Prisniparnee), Padam (Lotus), Vanyam (Kutannatam), and the Saaribaadi gana ameliorate Pitta.

7. **Kaphaharaganas**

Aaragwhaadigana, Arkaadigana, Mushakaadigana, Asanaadigana, Surasaadigana, Mustaadigana, and Vatsakaadigana ameliorate Kapha Dosha.

8. Jeevaneeyaadigana

Jeevanthee, Kaakolee, Ksheerakaakolee, Medaa, Mahamedaa, Mudgaparnee, Maashaaparnee, Rishabhaka, Jeevaka and Madhuka (Yashtimadhu) constitute Jeevanee-yaadigana. The name of the gana itself implies that it confers vitality (i.e. it is life-giving).

9. Vidaayaadigana

Vidaaree, Panchaangula (Eranda), Vrischikaalee (Meshasringee) Vrischeeva (Kshudravarshaabhoo), Devaahvaya (Devadaaru), two kinds of Soorpaparnee (Mudga-parnee and Maashaparnee), Kandookaree (Kapikachool) Jeevana Panchamoolam (Abheeru, Veeraa, Jeevantee, Jeevaka and Rishabhaka), Haraswapanchamoolam (Brihatee, Kantakaaree, Saalaparnee, Prisniparnee and Gokshuraka), Gopasutaa (Saaribaa) and Tripaadee (Hamsapadee) constitute Vidyaayaadigana.

The Vidaayaadigana is Hydria (pleasing), Brimhana (tissue-builder), and it ameliorates Vaata and Pitta besides checking Sosha (wasting), Gulma (tumour), Angamarda (bodily soreness), Oordhwaswaasa (kind of hard breathing) and Kasasa (cough).

10. Saaribaadigana

Saaribaa, Useeram, Kaasmarya, Madhooka, Sisiradwayam (Chandanam and Raktachandanam), Yashtee (Yashtimadhu) and Parooshakam constitute Saaribaadigana which ameliorate Daaha (burning sensation), Pitta, Rakta (disorders of), thirst and Jwara (fever).

11. Padmaakadigana

Padmaakam, Pundra (Prapoundareekam), Vriddhi (Sraavanee), Tunga (Vamsalochanaa), Roddhi (Mahaasraavanee), Sringee (Karkatasringee), Amritaa (Gudoochee) and the drugs constituting Jeewantyaadigana (afore constitute Padmakaadigana).

The ingredients of Padmakaadigana increase the breast milk, ameliorate the vitiated Pitta, cause satisfaction (Preenana), promote life (Jeevana) and build tissues (Brimhana) they are aphrodisiacs (Vrishya).

12. Parooshakaadigana

Parooshakam, Varaa (Triphala), Draakshaa, Katphalam, Katakaphalam, Raajaahvam (Aargwadha), Daadimam, Saakam (Karachcha constitute Parooshakaadigana which ameliorates thirst, diseases pertaining to urine (Mootraamaya) and Vaata.

13. Anjanaadigana

Anjanam (Srotonjanam or Souveeraanjanam), Phalinee (Priyangu), Maamsee (Krishnajataa), Padmam (Lotus), Utpalam (Lily), Rasaanganam, Elaa, Madhukam (Yashti-madhu), Naagaahvam (Naagakesaram) constitute Anjanaadigana which ameliorates Visha (Poison), Antardaaha (internal burning sensation) and Pitta.

14. Patolaadigana

Pattola, Katurohinee, Chandanam, Madhusravaa (Surangee), Gudoochee and Paathaa consti-

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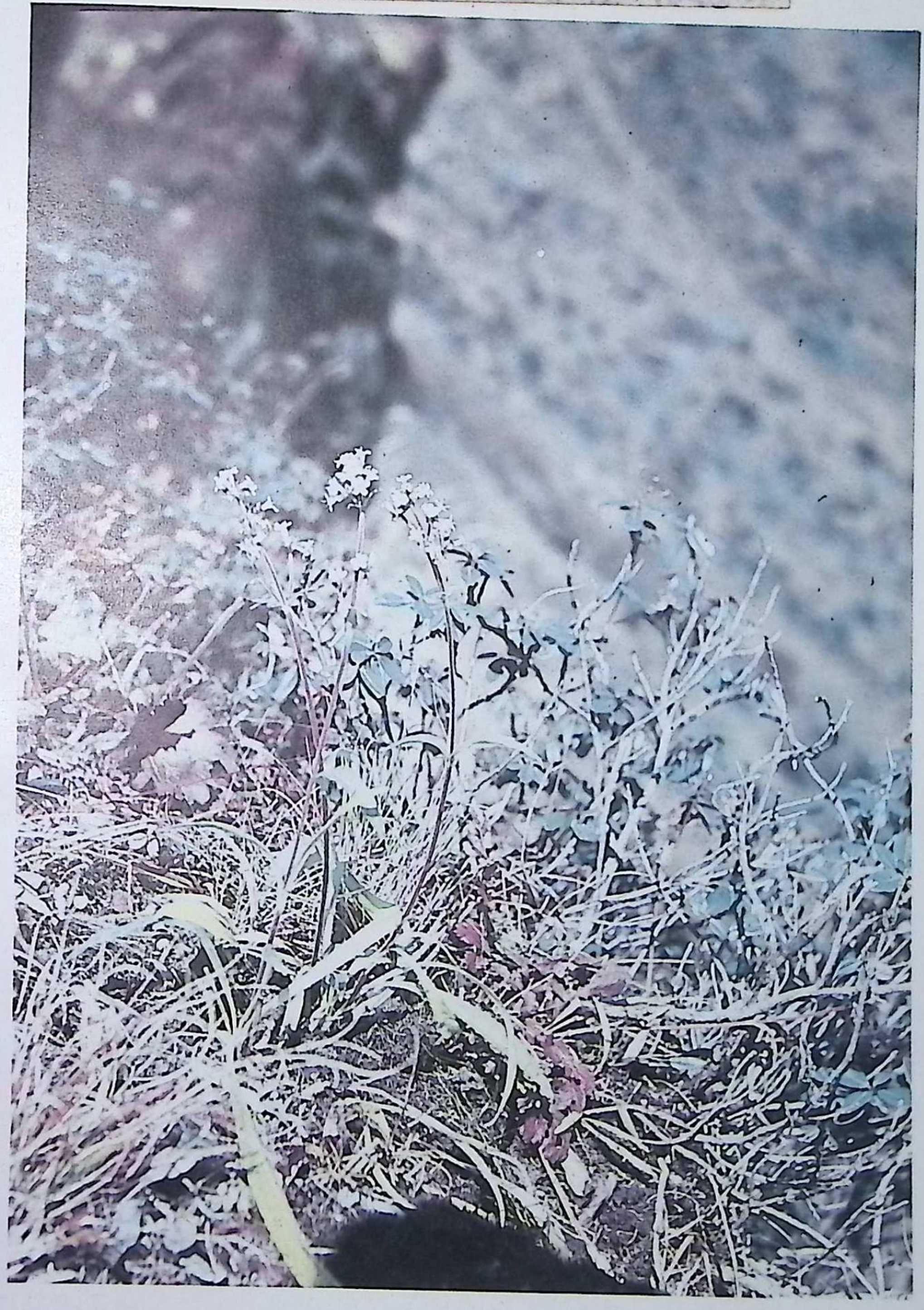


tute Patolaadigana which checks Kapha, Pitta, Jwara, Visha, Vami (Vomiting), Arochaka and Kaamalaa (Jaundice).

15. Gudoochyaadigana

Gudoochee, Padmaka, Arista (Nimba), Dhanakaa (Dhaanyaka) Raktachandanam constitute Gudooch-yaadigana which ameliorates Pitta, Kapha, Jwara, Vomiting, burning sensation, and thirst, it promotes appetite.

16. Aaragwadhaadigana

Aaragwadha. Indrayava, Paatali (Vasantha Dootee), Kaakatiktaa (Saarangeshtaa), Nimba , Amritaa(Gudoochee) Madhurasaa (Moorvaa), Sruva Vriksha (Vikamkata), Paathaa (Ambashtaa) Bhoonimba, Sairyaka (Sahachara, Patola, Karanjayugma (Pooteekaranja) and Naktamaala, Saptachchada (Saptaparna). Agni (Chitraka), Sushavee (Kaaravee), Phala (Madanaphala), Baana (Sahachara) and Ghontaa (Poogavisesha) constitute Aaragwadhaadigana which checks vomiting, Kushta, Visha, Jwara, Kapha, Itching and Prameha; it purifie Dushta Vrana.

17. Asanaadigana

Asana (Peeta Saala), Tinisa (Syadana), Bhoorja, Swetavaaha (Arjuna), Prakeerya, (Pootikaranja), Khadira, Kadara (Swetasaara), Bhandee (Sireesha), Sinsapaa (Mandala-patrikaa), Meshasringee, Trih (Chandanam, Rakta- chandanam and Daaruharidraa), Tala (Taala), Palaa (Kinsuka), Jongaka (Aguru), Saakam (Varadaaru), Saala, Kramuka (Poos) Dhava (Sakata), Kulinga (Sakrayava), Chaagakarna and Aswakarna constitute Asanaadigana which ameliorates Switra (Leucoderma), Kush, Kapha, Krimi (worms), Paanduroga, Prameha and reduce Medodosha (obesity).

18. Varanaadigana

Varuna, Sairyakayugma (Kuravaka and Kurantaka), Sataavaree, Dahana (Chitraka), Morata (Moorva), Bilwa, Vishaanikaa (Ajasringee) Dwibrihatee (Brihatee and Kantakaari), Dwikaranja (Pootikaranja and Naktamaala), Jayaadwayam (Tarkaaree and Hareethakee), Bahalapallava (Sobhaanjana), Darbha (Kusha) and Rujaakara (Hitaalu) constitute Varanaadigana which checks Kapha, Medas (fat), Poor digestion (Manadaagni), Vaata (vitiated downwards), headache, Gulma, Baahyaviddhi and Antarvidradhi).

19. Ooshakaadigana

Ooshaka (kallara), Thuththakam (kitiha), Hingu, Kaaseesadwaya (Pushpakaaseesam and Paansukaaseesam), Saindhavam, Silaajatu constitute Ooshakaadigana which checks Mootrakrichra, Asma (calculus), Gulma, Medas (fat) and Kapha.

20. Veerataraadigana

Vellaantara (Veeratara or Useera), Aranika (Agnimandha), Booka (Easwara mallika), Vrisha (Vaasa), Asmabheda (Paashaanabheda), Gokantaka (Gokshura), Itkataa, Schaachara, Baana, Kaasa, Vrikshaadanee, Nala, Kusadwaya (Sthoola Darbha and Sookshma Darbha Gunthaa (Vrintartrina), Gumdraa (Pada Eraka), Bhallooka (Syonaaka), Morata, Kuranta (Sitivaaraka), Karambha (Uttamaarani), Paartha (Suvarchalaa) constitute Veerata-raadigana. This Gana ameliorates diseases caused by vitiated Vaata; it is , further, beneficial in Asmaree (Calculus), Sarkaraa(sand in urine). Mootrakrichra (Dysuri) Mootraaghaata (Dribbling of urine etc.), and pain in urinary organs.

21. Rodhraadigana

Rodhra, Saavarka Rodhra, Palaasa (Sathee), Jinginee (Krishnasaalmalee), Sarala (Devadaru), Katphalam, Kutsitaamba (Kadamba), Kadalee (Rambhaa), Gatasoka (Asoka), Elavaalu, Paripelavam (Kutannatam) and Mocha (Sallakee) constitute Rodhraadigana which reduces fat, Kapha, Yonidosha (disorders of Yoni) and which is astringent, complexion giving and antipoisonous.

22. Arkaadigana

Arka, Alarka, (white flowered variety of Arka), Naagadanti Visalyaa (Langalee), Bhaargee, Raasnaa, Vrischikaalee (Ushtradhoomaka), Prakeeryaa (Karanjaka), Pretyakpushpee (Apaamaarga), Peetataila (kaakaadanee), Udakeeryaa (Karamja), Swetaa Yugmam (Kinihi and Paalindee) and Taapasavrisksha (Ingudee) constitute Arkaadigana. Arkaadigana reduces Kapha Medas (fat) and poison; it ameliorates Krimi and Kushta; it purifies Vranas (ulcers) especially.

23. Surasaadigana

Sursayugma (Krishna Tulasi and Sweta Tulasi), Phanijjam (Mareechaka), Kaalamaalaa (Krishnaarjaka), Vidngam, Kharabusa (Maruvaka), Vrishakarnee (Mooshi-kakarnee), Katpahalam, Kaasamarda, Kshavaka, Sarasee (Tumbarapatrikaa), Bhaargee (Angaaravalee), Kaamukaa (Raktamanjaree), Kaakamachee, Kulahala (Alambusa), Vishamushti, (Kuchilaa), Bhoostrina (Atichatra) and Bhootakesee (Maamsee Putrachaaraa) constitute Sura-saadigana which checks Kapha, Medas, Krimi, Pratisyaaya, Aruchi (Anorexia), Swaasa (hard breathing) and Kaasa (cough) and which purifies the Vran.

24. Mushkaakaadigana

Mushkaka (Mokshaka), Snuk (Gudaa), Varaa, (Triphala), Dweepi (Chitraka). Palaasa, Dhava and Sinsapaa constitute Mushkakaadigana which checks Gulma, Premeha Asmaree, Paanduroga, Medas, Arsas (Piles), Kapha and Sukradosha.

25. Vatsakaadigana

Vatsaka (Vanatiktaka), Moorva, Bhaargee, Katukaa (Katurohinee), Maricham, Ghunapriyaa (Ativishaa), Gandeeram, (Snuhee), Elaa, Paathaa, Ajaajee (Jeerakam), Katvangaphalam (Aralukaphalam), Ajamoda (Deepyaka), Siddhaartha (Goura Sarshapa), Vachaa, Jeeraka, Hingu, Vidangam, Pasugandhaa (Ajagandhaa) and Panchakolakam (Pippalee, Pippaleemoola, Chavya, Chitraka and Sunthee), constitute Vatsakaadigana which checks Vaata, Kapha and Medas, Peenasa, Gulma, Jwara, Soola and Durnaama (Piles).

26. Vachaadigana

Vachaa, Jalada (Musta), Devaahwa (Kilimam) Naagaram (Sunthee), Ativishaa and Abhayaa constitute Vachaadigana.

Haridraa, Daaruharidraa, Yastryaahwa (Yashtimadhu), Kalasee (Parsniparnee) and Kutajobhava (Intrayava) constitute Haridraadigana. Both Vachaadigana and Haridraadigana check Aamaateesaara. They are also useful in Medas; excessive Kapha, Vaayu and impurities of breastmilk.

27. Privangwaadigana

Priyangu (Syaama), Pushpaanjanam (Reetipushpam), Anjanayugmam (Srotoanjanam and Souveeranjanam), Padmaa (Padmachaarinee), Padmaadrajah (Padmakesaram), Yojanavalee (Manjishtaa) Anantaa (Yavaasa), Maanadruma (Saalmalee), Mocharasa (Saalmalee Niryaasaa), Samangaa (Namaskaaree), Punnaaga (Tunga), Seetham (Chandanam), Madaneeyahetuh (Dhaatukee) constitute Priyangwaadigana.

28. Ambashtaadigana

Ambaashtaa (Mayoorasikhaa), Madhukam (Yashti-madhu), Namaskaree (Samangaa), Nandeevriksha (Prarohee), Palaasa, Kachchuraa (Dhanvayaasa), Rodhram, Dhaatakee, Bilwapesika, Katwanga (Syonaka) and Kamalodhbhavam Rajah (Padmakesaram) constitute
28. Ambashtaadigana.
Both Priyangwaadigana and Ambastaadigana check Pakwaateesaa; they are Sandhaaneeya (cause union of fractures etc.); they are beneficial in Pitta and cause healing of ulcers.

29. Mustaadigana

Mustaa, vachaa, Agni (Chitraka), Dwinisaa (Haridraa and Daarunharidraa), Dwitiktaa (Katurohinee and Kaakatikta), Bhallaataka, Paathaa, Triphala, Vishaakhyaa (Suklakandaa), Kushtam, Trutee (Elaa), Haimavatee (Swetavachaa) constitute Mustaadigana which are curative of disorders of vulva and uterus (Yoniroga) and breastmilk and are digestive of Malaas.

30. Nyagrodhaadigana

Nyagrodha (Vata), Pippalaa (Aswattha), Sadaaphala (Udumbara), Rodhrayugman (Rodhra and Saavara Rodhra), Jamboodwaya (Raajajamboo and Kaakajamboo), Arjuna, Kapeetana (Vaaneera), Somavalka (Sitasaarakhadira), Plaksha, Aamra, Vanjul (Vetasa), Piyaala, Palaasa, Nandee (Jayavriksha), Kolee (Bedaree), Kadamba, Viralaa (Tindukee), madhukam (Yashtimadhu) and modhookam (Madhookapushpam) constitute Nyagrodhaadigana. Nyagrodhaadigana helps to heal the Vranas, is astringent and useful in fractures (Bhagnasaadhnah); it also checks Medas, Pitta, Rakta, Thirst, Daaha (burning sensation) and Yoniroga.

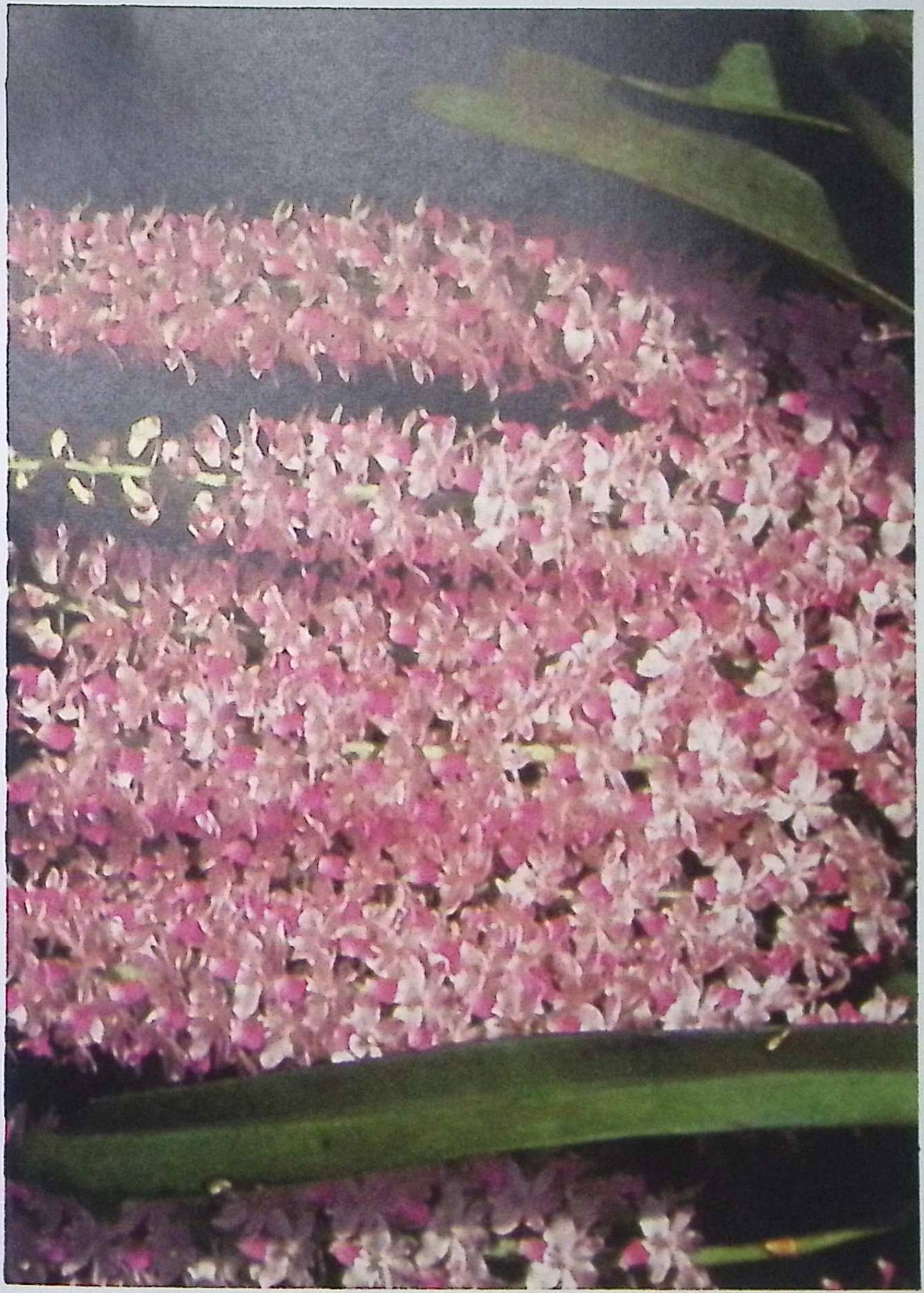
31. Elaadigana

Elaayugmam (Sookshmaa Elaa and Sthoolaa Elaa), Turushka (a kind of artificial gum) Kushtam, Phalinee (Gandha Priyangu), maamsee (Naladam), jalam (Hreeberam), Dhyaamakam (devadaghakam), sprikkaa (Devee), Chouraka (Grandhiparnee), Chocha (Twak), Patram (Gandhapatram), Tagaram (Chakram), Sthouneyam (Tailapeetakam), Jeateerasa (bola), Sukti (Nakha), Vyaaghranakha, Amaraahwam (Devadaaru), Aguru, Sreevaasakam, Kumkumam, Chandana, Guggulu, Devadhoopa (Sarjarasa), Khapura (kunduruka), Punnaaga (Raktakesara) and Naagaahwayam (Naagakesaram) constitute Elaadigana.
Elaadigana reduces Vaata, Kapha and Visha (Poison), it develops complexion of the body; it also cures itching, Pitikaa (elevated swellings like abscesses etc.) and Kothas (red eruptions on skin).

32. Syaamaadigana

Syaamaa (Syaamaa Trivrit), Dantee (Chitraa), Dravantee (Indurukarnikaa), Kramuka (Pattikaalodhra), Kutaranee (Suklaa), Sankhinee (Yavatiktaa), Charmasaahwaa (Saatalaa), Swarnaksheeree, Gavaakshee, Sikhari (Apaamaarga), Rajanaka, Karanja, Bastaantree (Vrishagandhaa), Vyaadhighaata (Kritamaala), Bahalabahurasa (Ikshu) and Teekshnavrikshaphala (Peeluphala) constitute Syaamaadigana. Syaamaadi checks Gulma, Visha (Poison), Aruchi (Anorexia), Kapha, Hridroga and Mootrakrichra (Dysuria).

These Ganas (Vargas or groups) may be used in the form of Kalka (paste), Quaatha (decoction), Sneha (medicated ghee or oil), Lehya etc., according to the Dosha or Dhooshya etc. and may be used for any purpose such as Nasyaa, Anuvaasana Vasti or Abhyanga or for internal administration as occasion requires.



Rhynchostylis retusa Blume.

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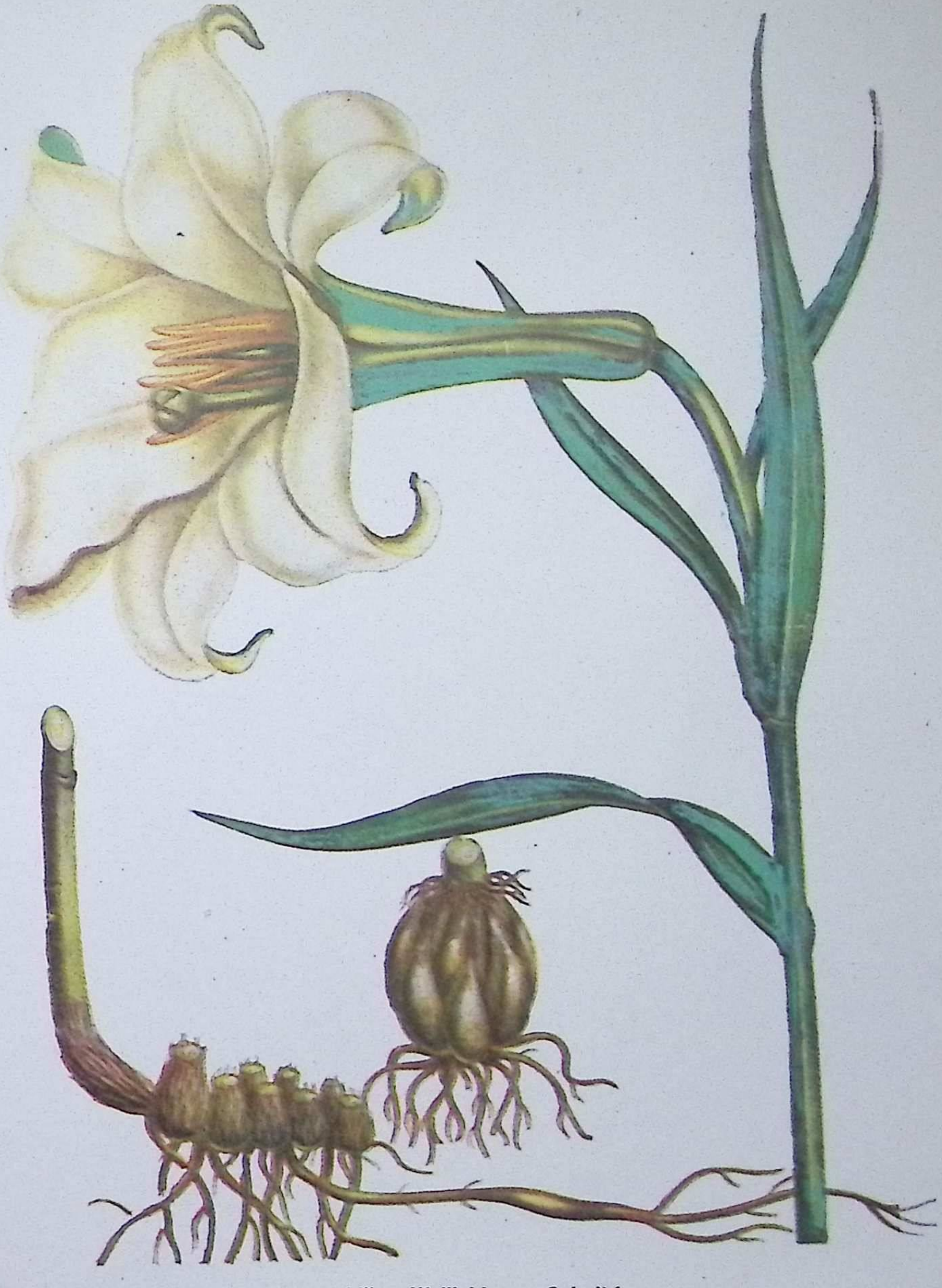
PHOTOGRAPHS

OF

MEDICINAL FLORA



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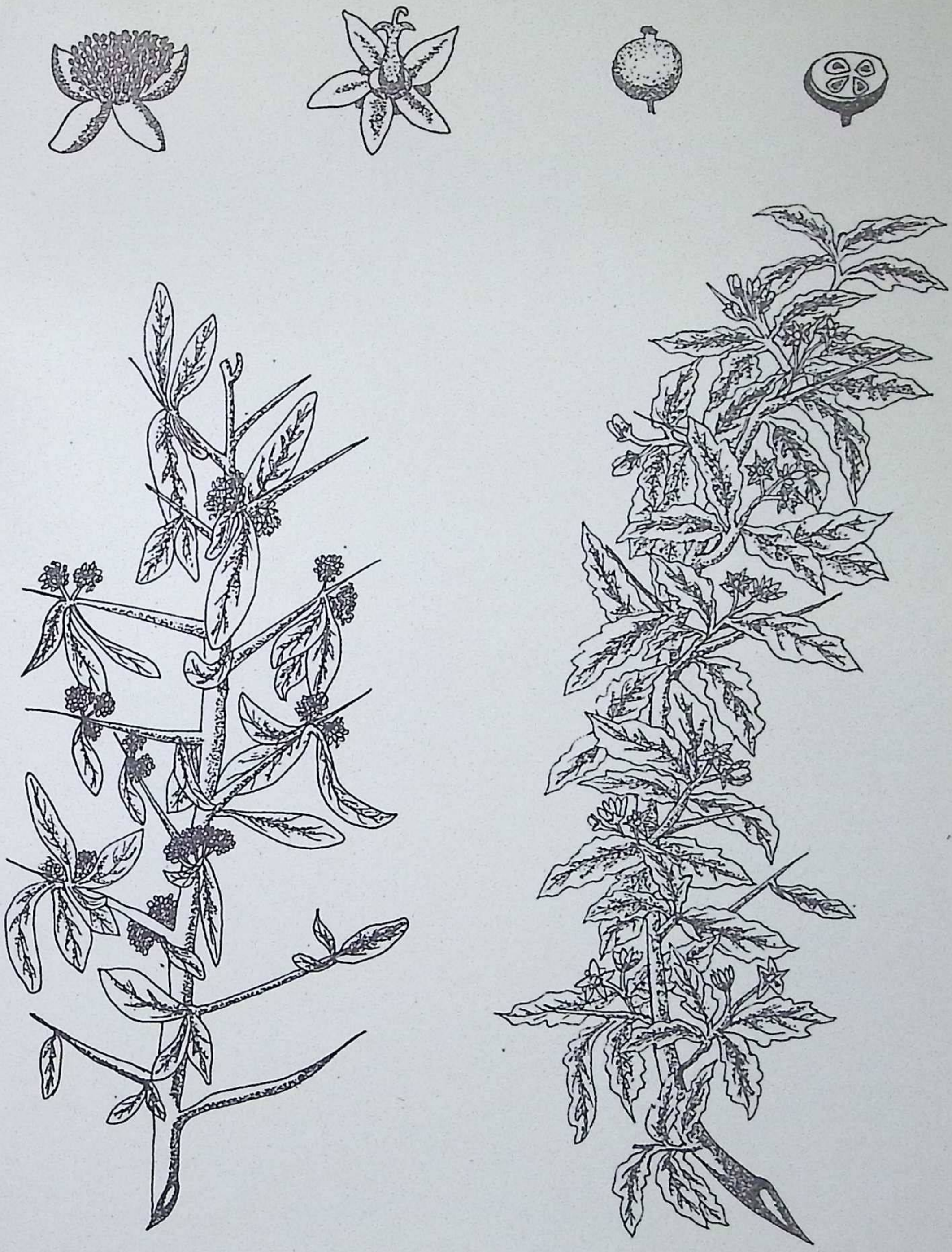

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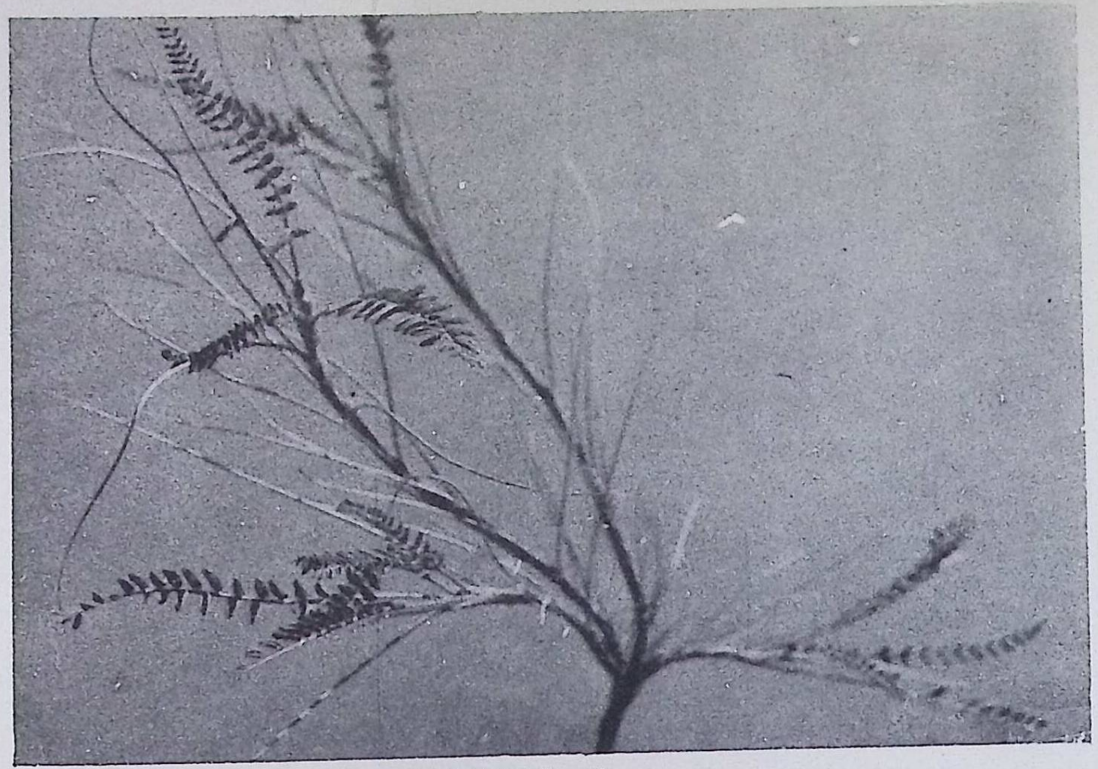
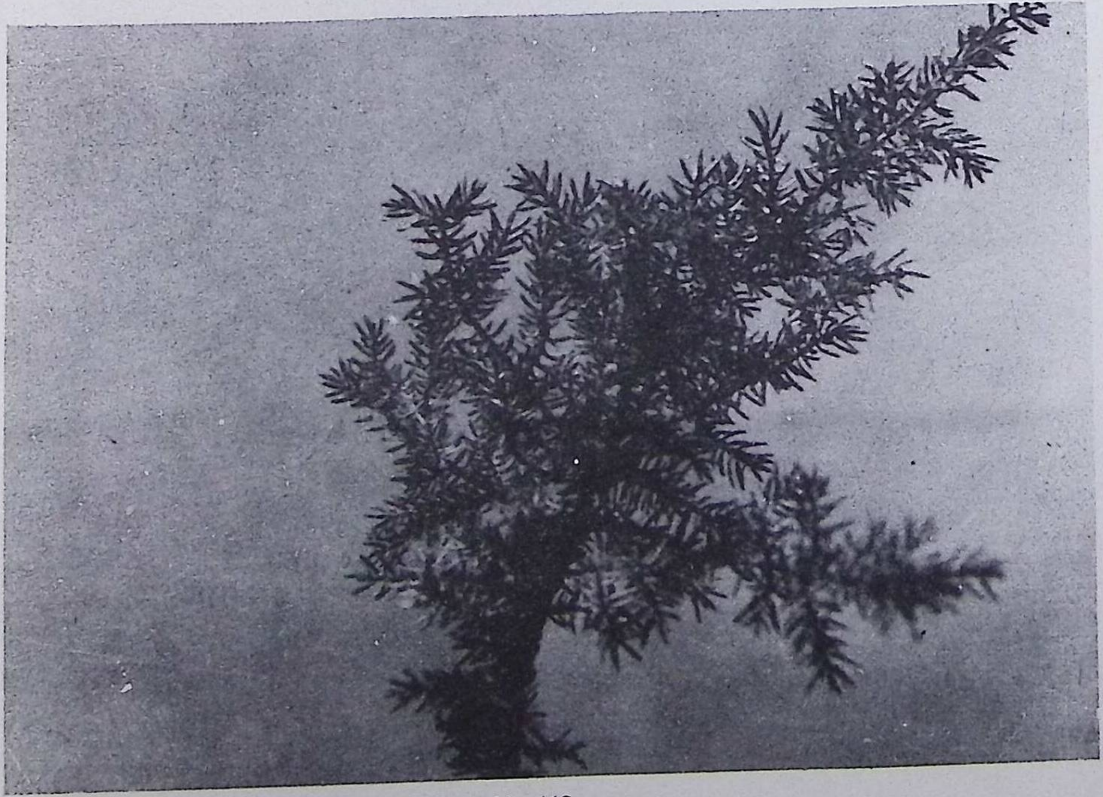
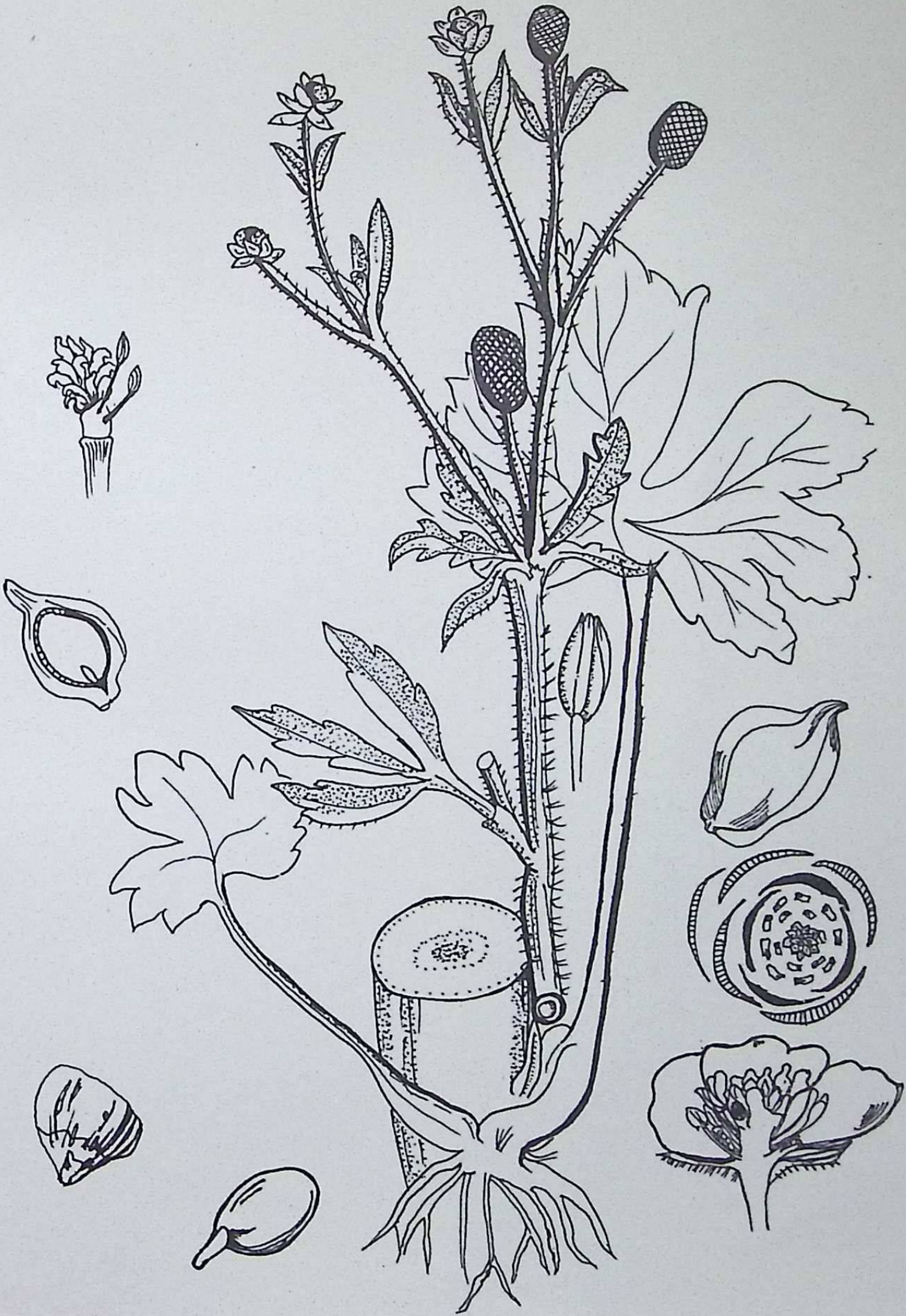


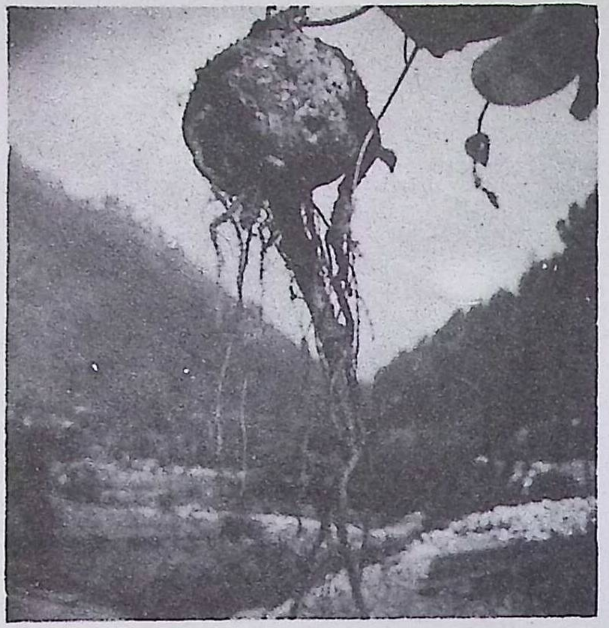
Astragalus candolleanus Royle (Rudar Vantie) Page No. 18



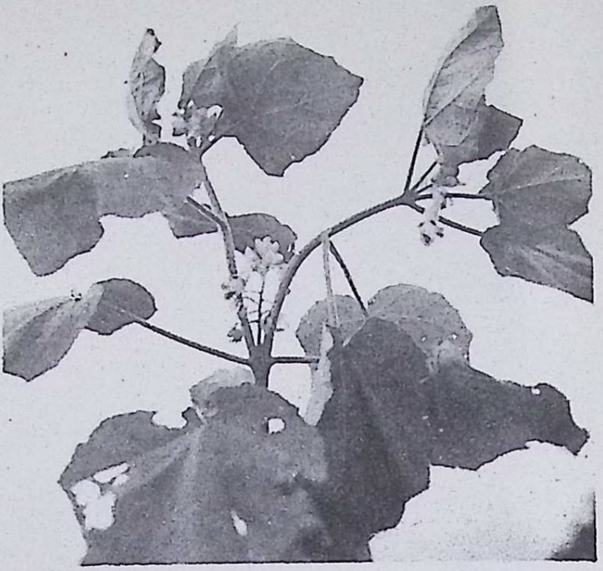
Juniperus recurva Buch-Ham. (Hapusha) Page No. 112

RANUNCULUS SCLERATUS LINN.

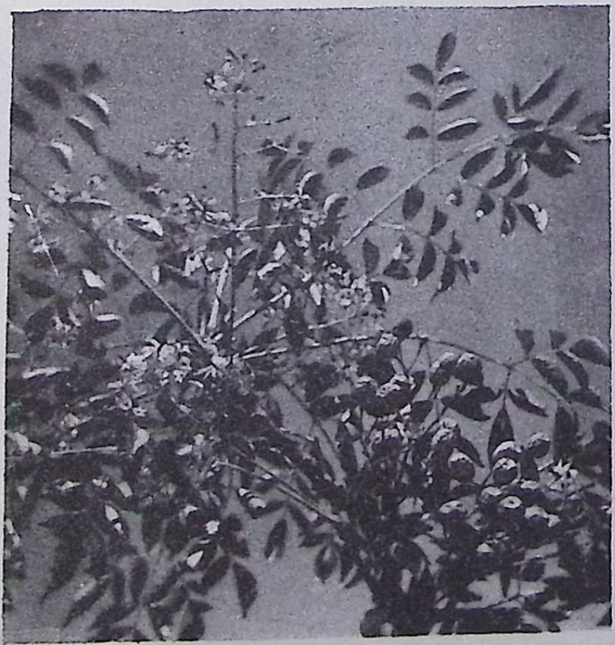




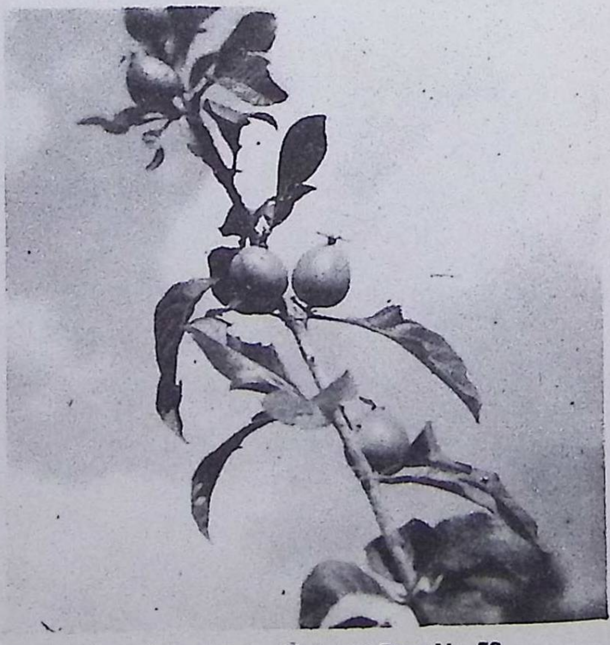
Stephania rotunda Hook.f. (S. glabra Miers) (Gindaru) Page No. 7



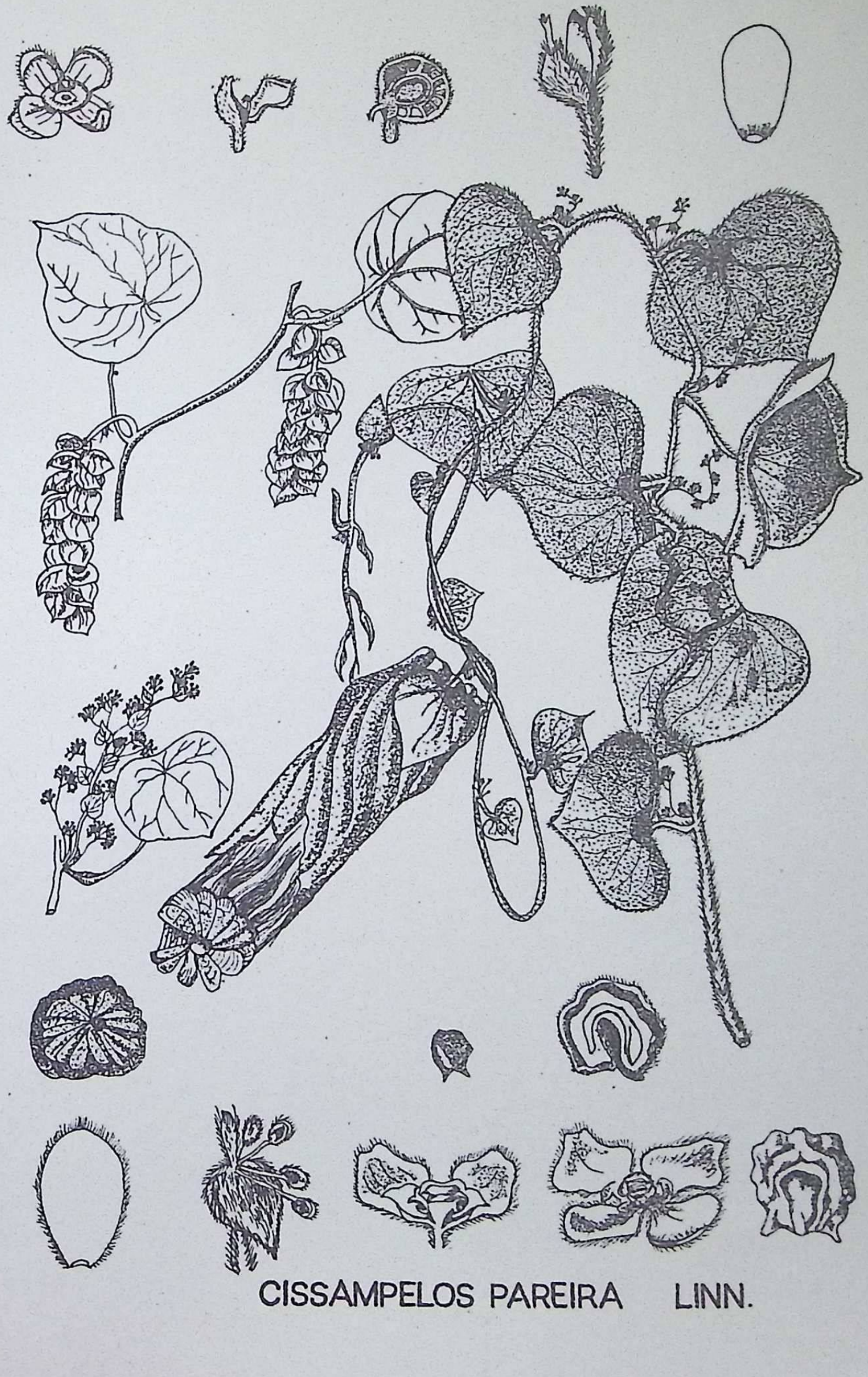
Martynia annua Linn. (Kakanasha) Page No. 93



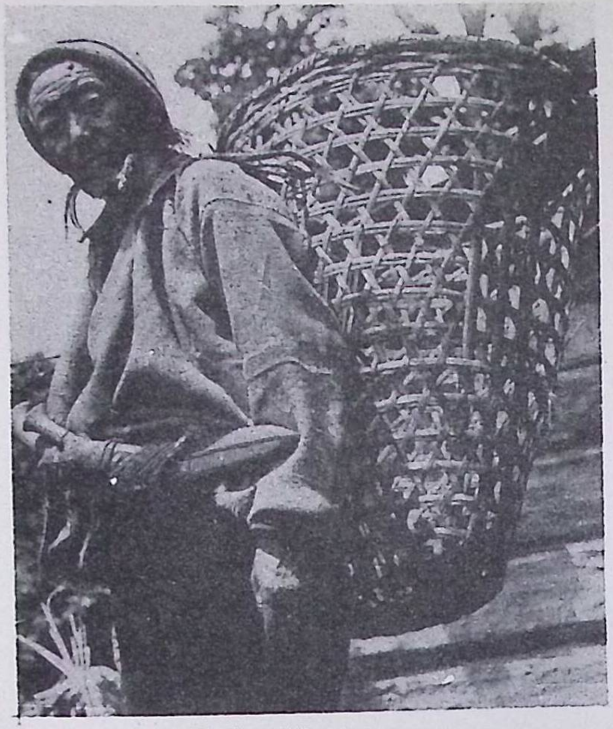
Melia azedarach Linn. (Mahanimba) Page No. 27



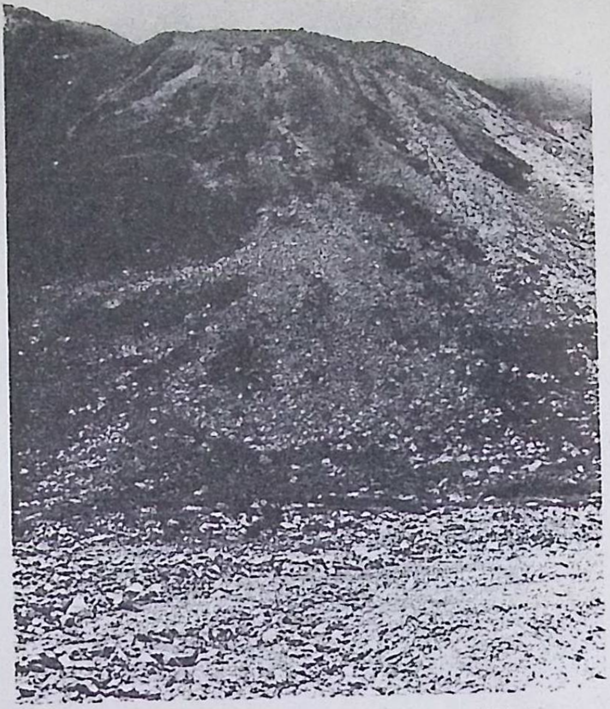
Randia dumetorum Lam : (Madana) Page No. 56



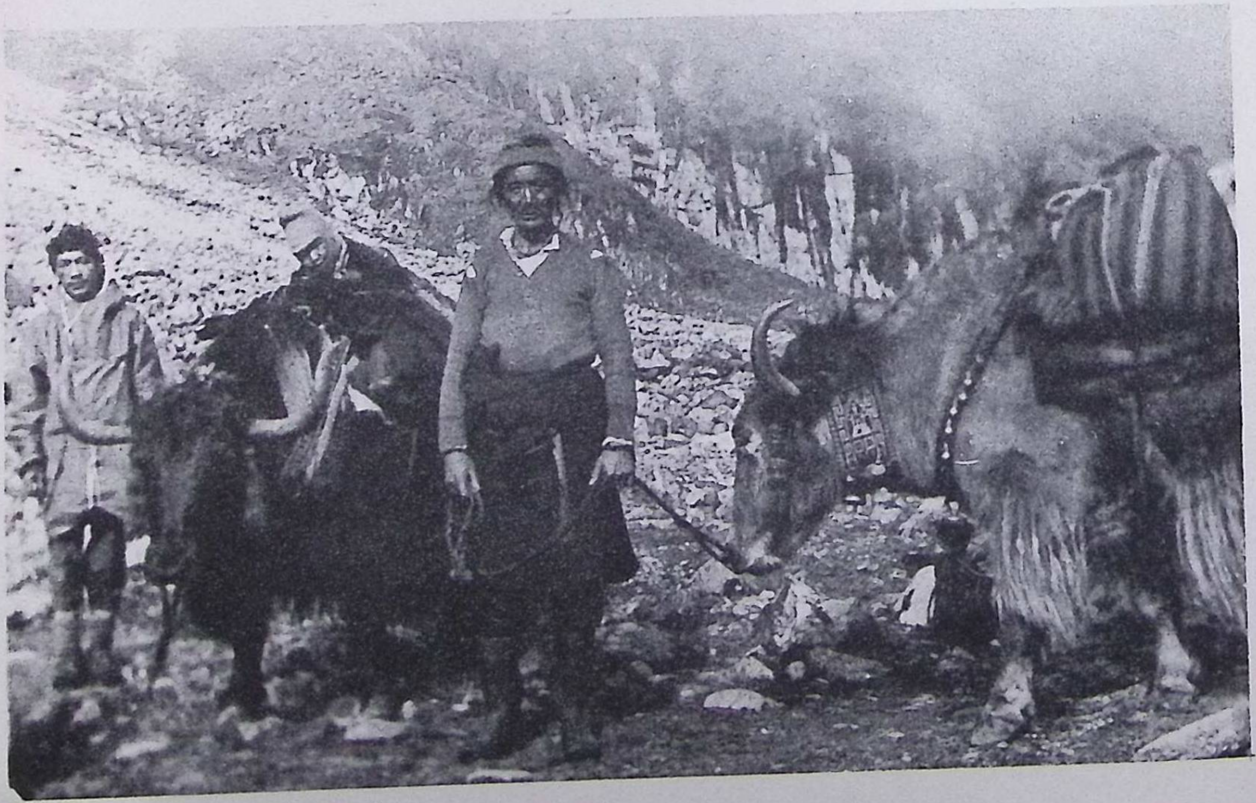
CISSAMPELOS PAREIRA LINN.



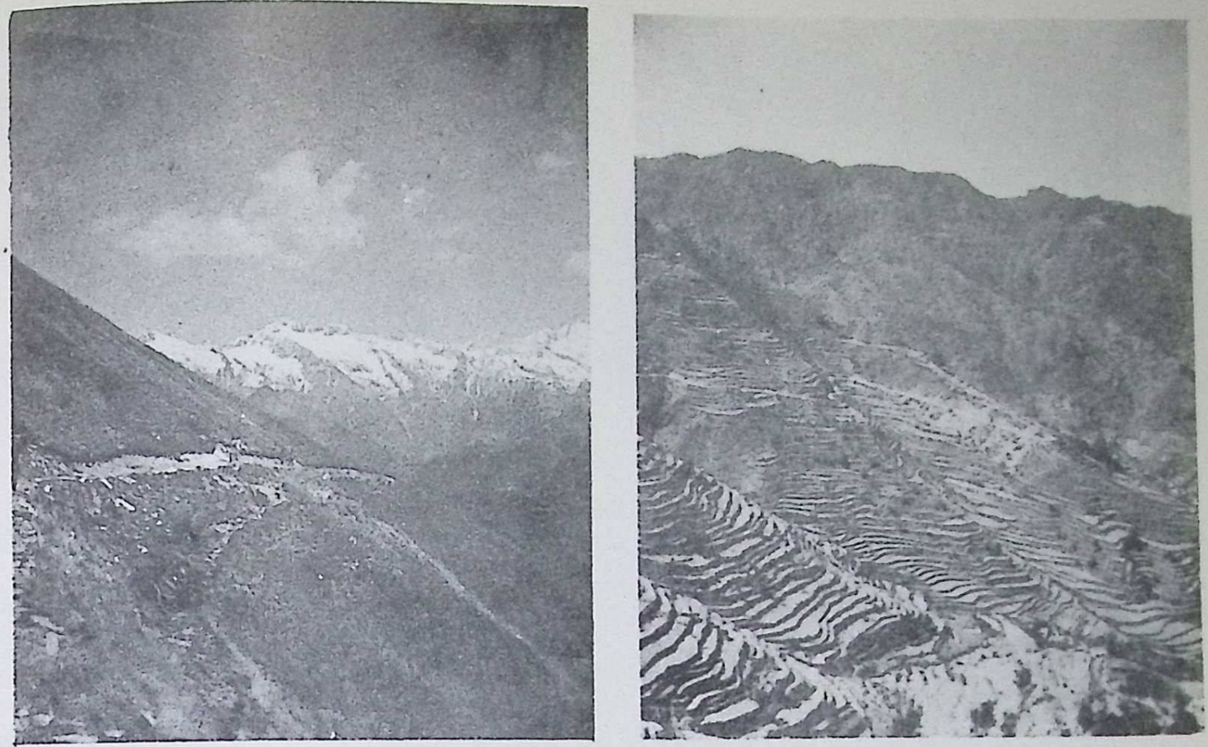
Bhotiya Tribes in Garhwal Himalaya.



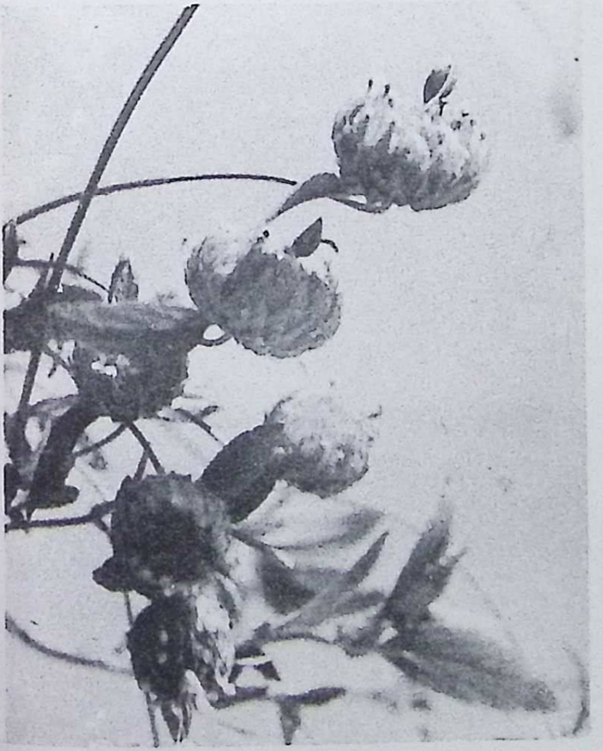
A view of Alpine Rock Forest in Garhwal Region.



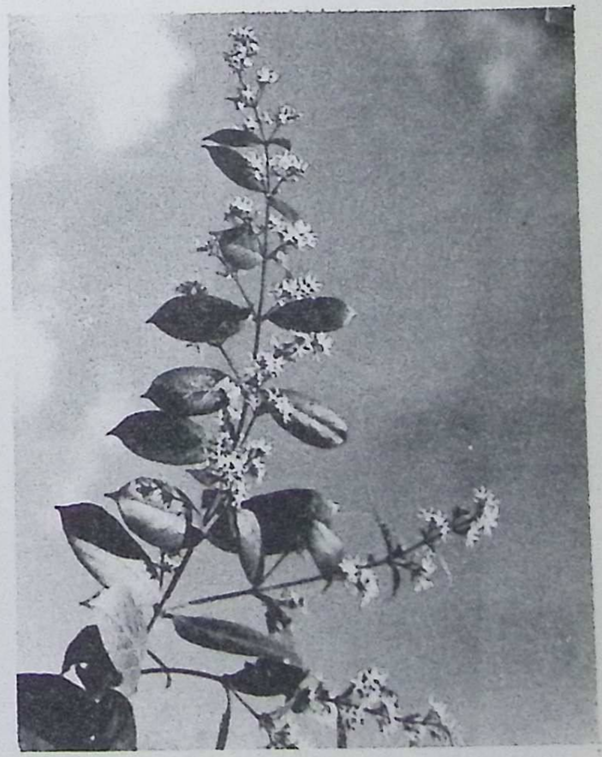
Important porter with Himalayan yak.



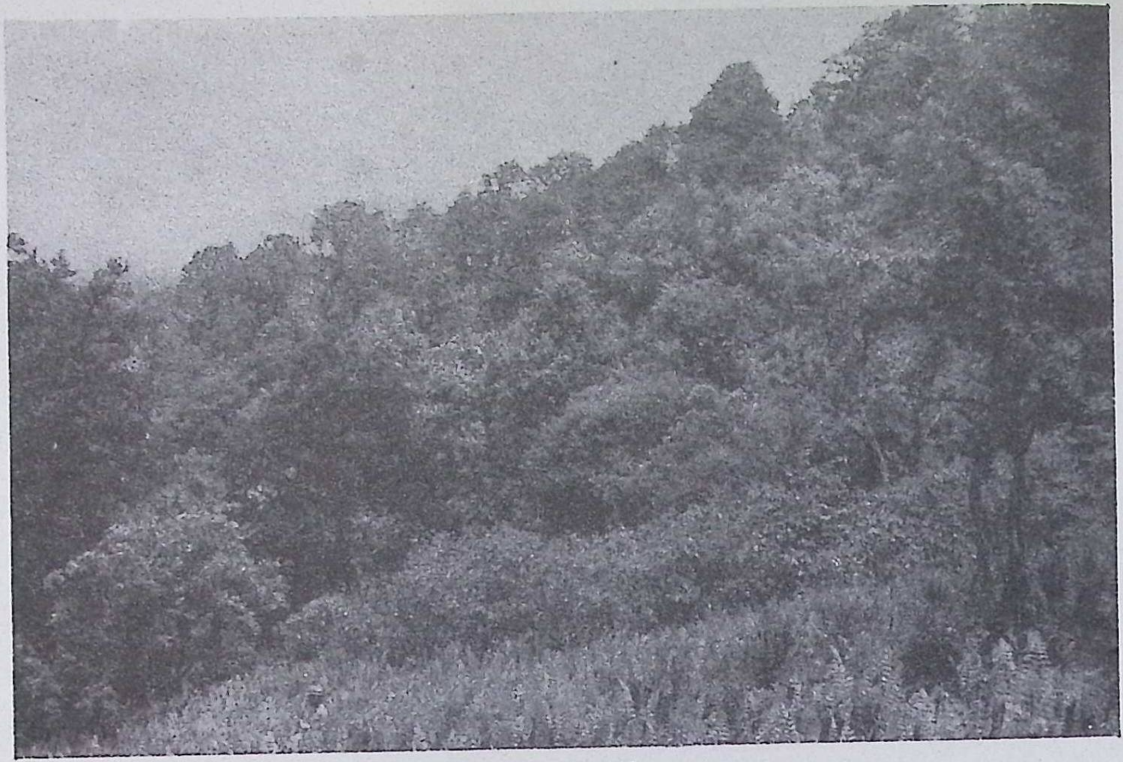
A view of Bhilangana Valley in Tehari Garhwal.



Leucas cephalotes Sprang. (Guma) (Dronpushmi)
Page No. 85

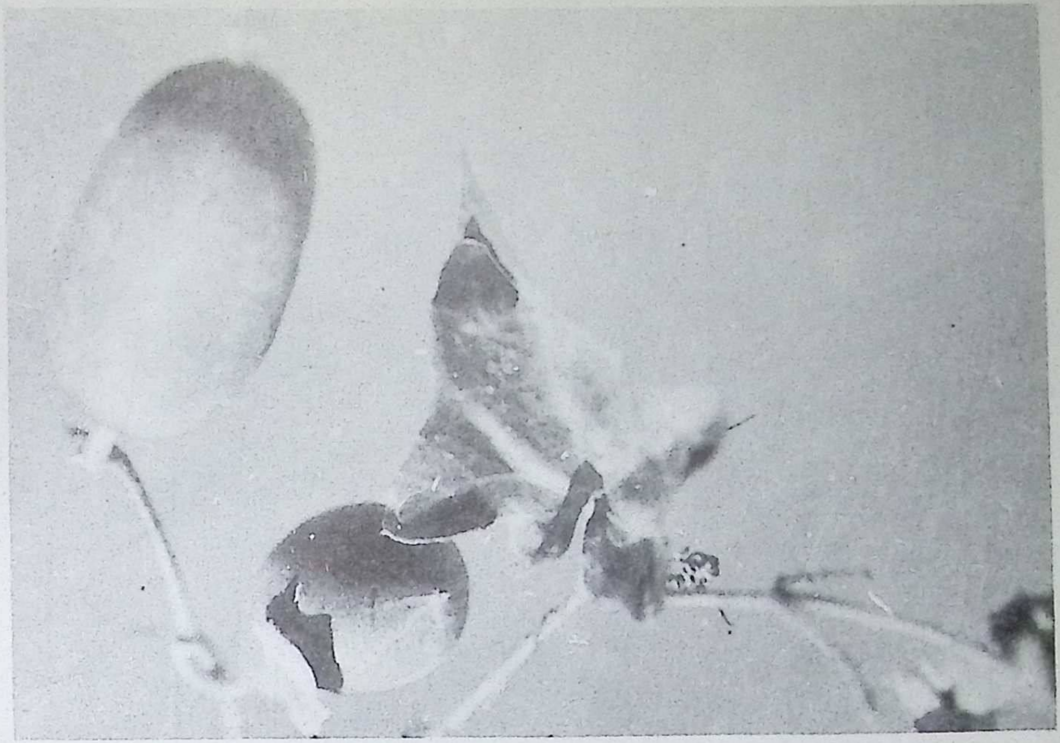


Ichhnocarpus frutescens R.Br. (Sarivafeed) Page No. 70

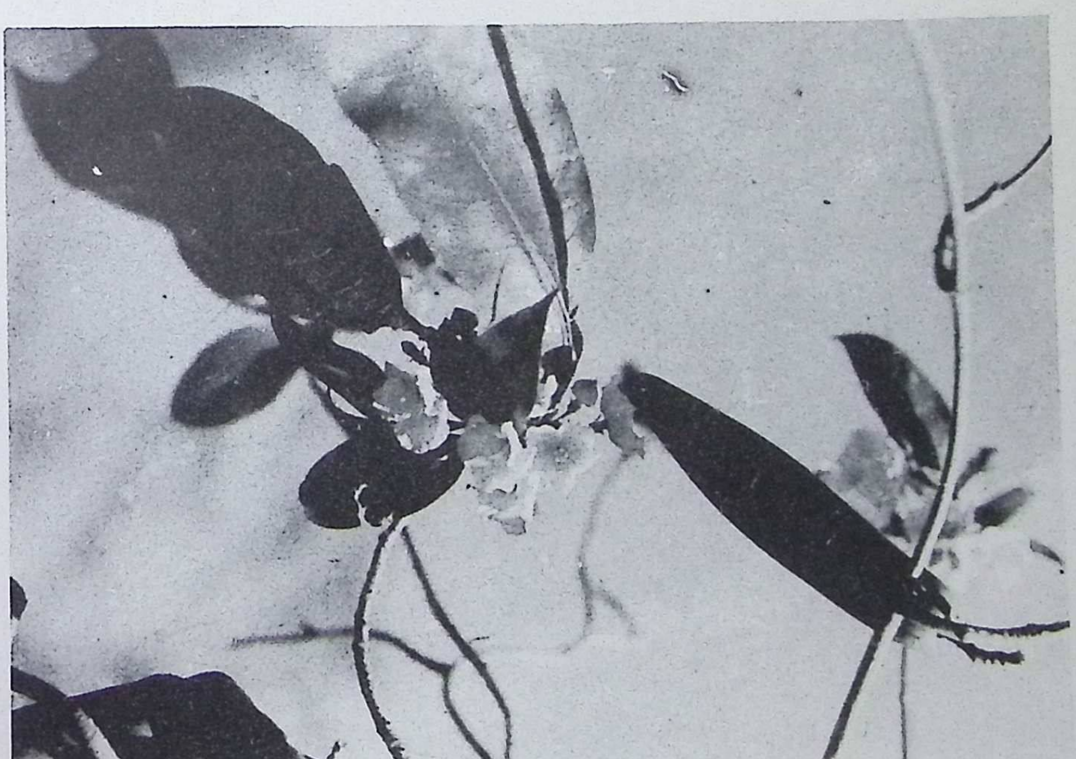


A view of **Acoraus Calamus** in Garhwal Region. Page No. 110

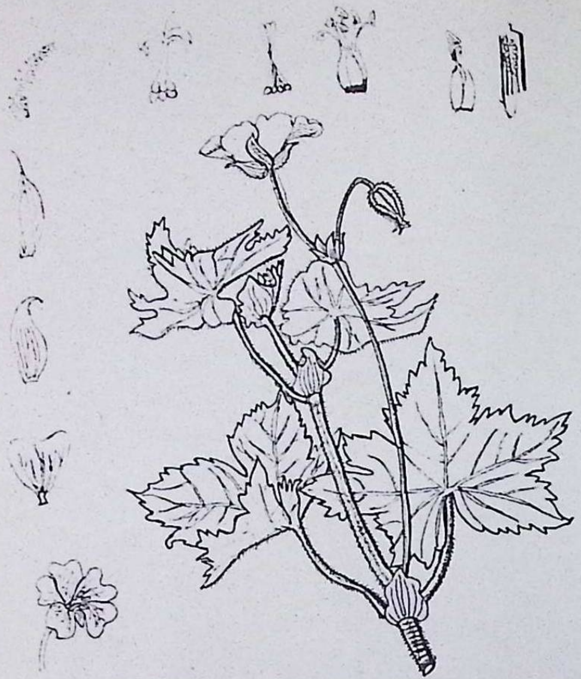
Muslim Guzzar Tribes in Bhilangana Valley.



Coccinia indica W. of A. (Bimbi) Page No. 4 8



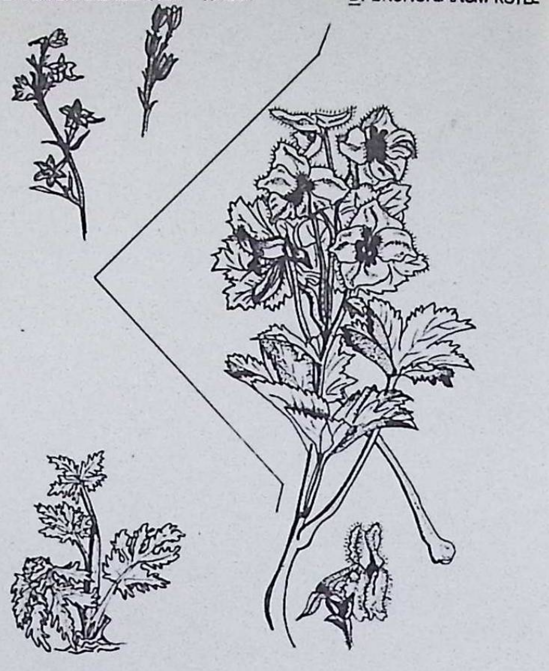
Vallaris solanaccea D. Ktze (Dudhi) Page No. 70

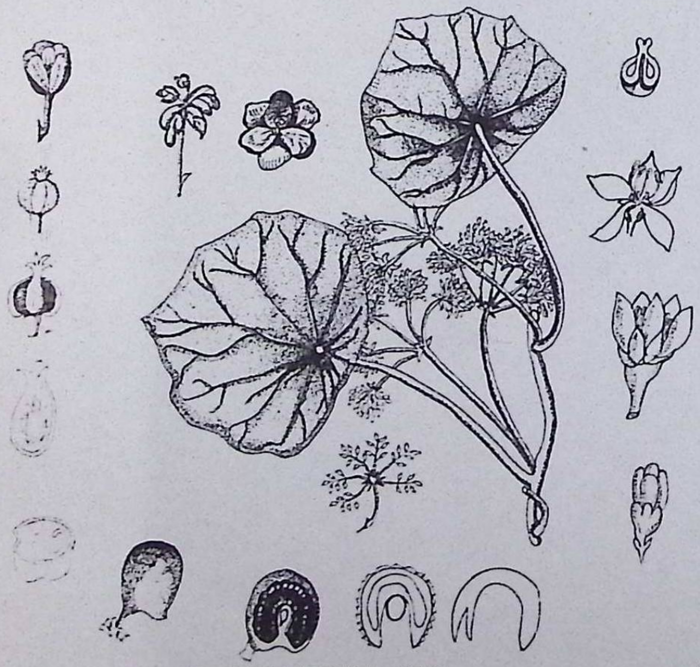


GERANIUM WALLICHIANUM SWEET.

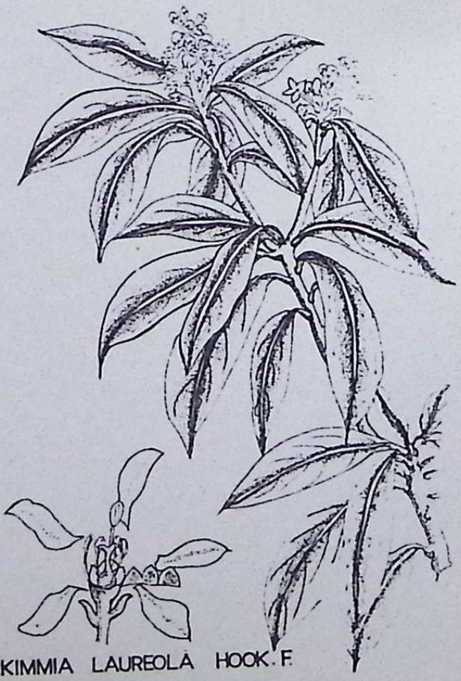
DELPHINIUM DENUDATUM WALL.

D. BRUNONIANUM ROYLE

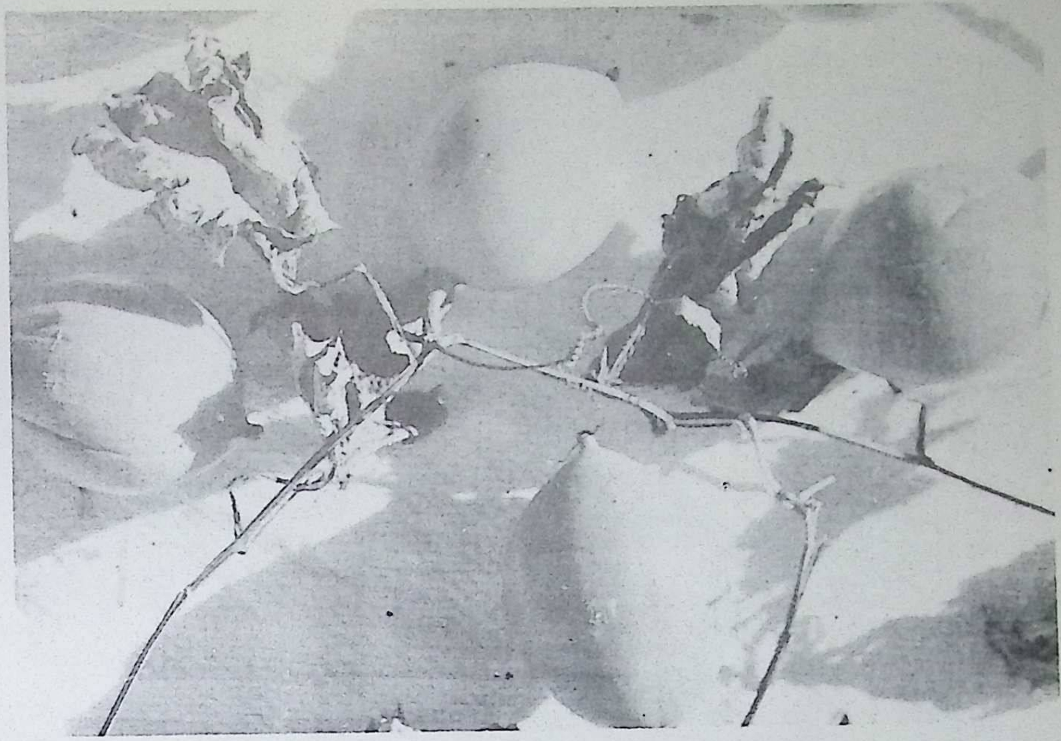




STEPHANIA ROTUNDA LOUR.

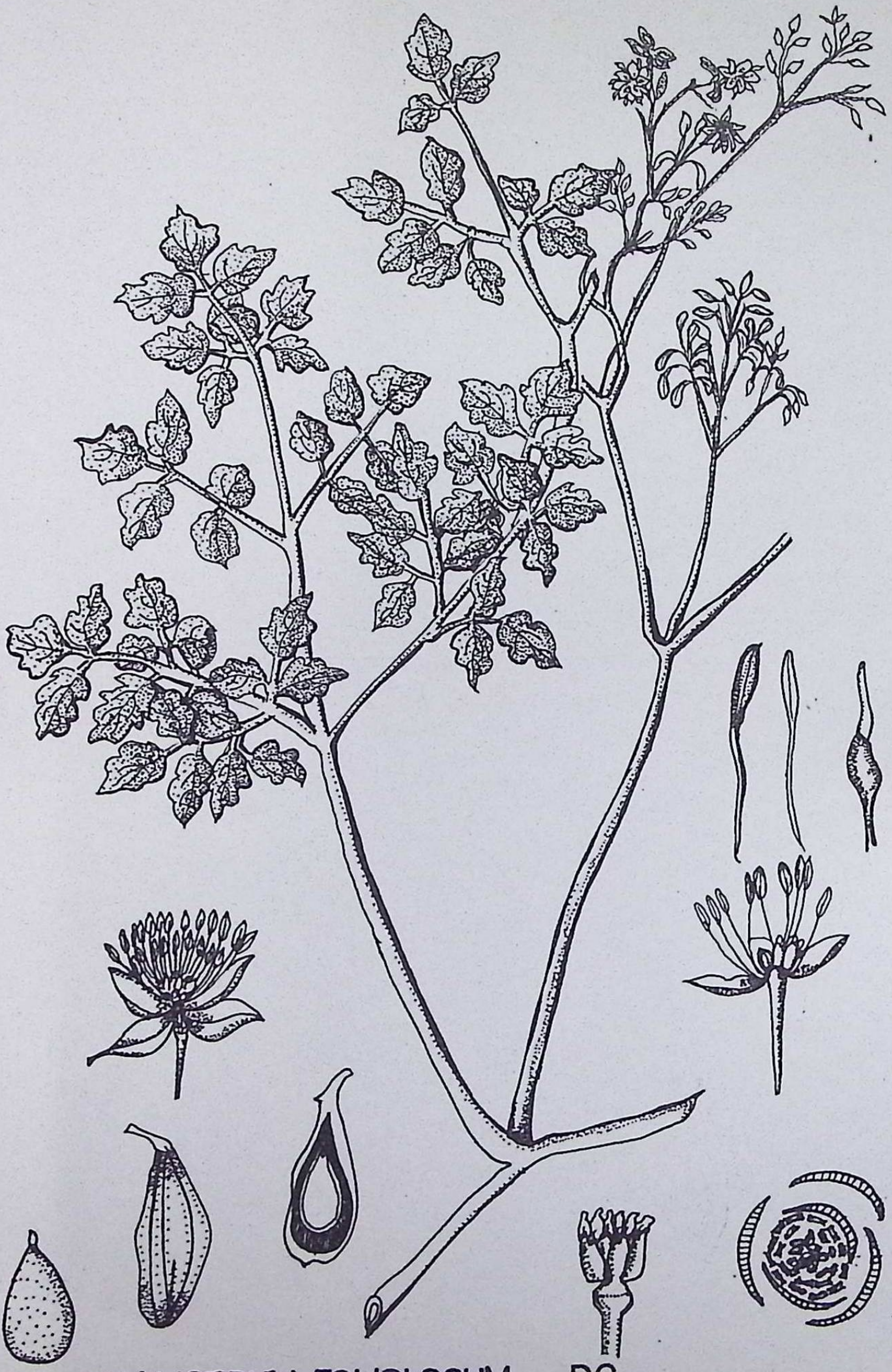


SKIMMIA LAUREOLA HOOK. F.

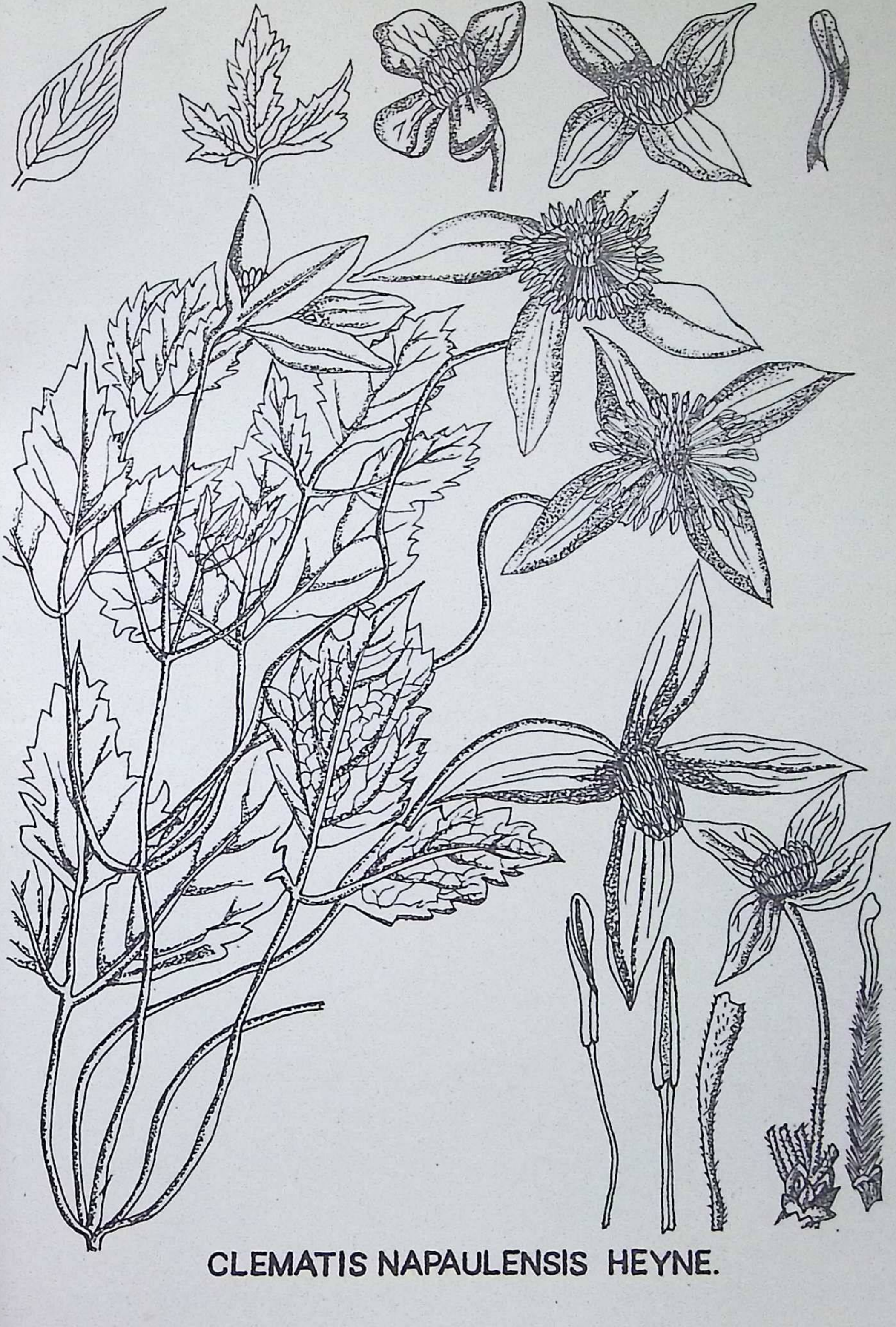


Trichosanthes bracteeta Voigt (Mahakala) Page No. 49

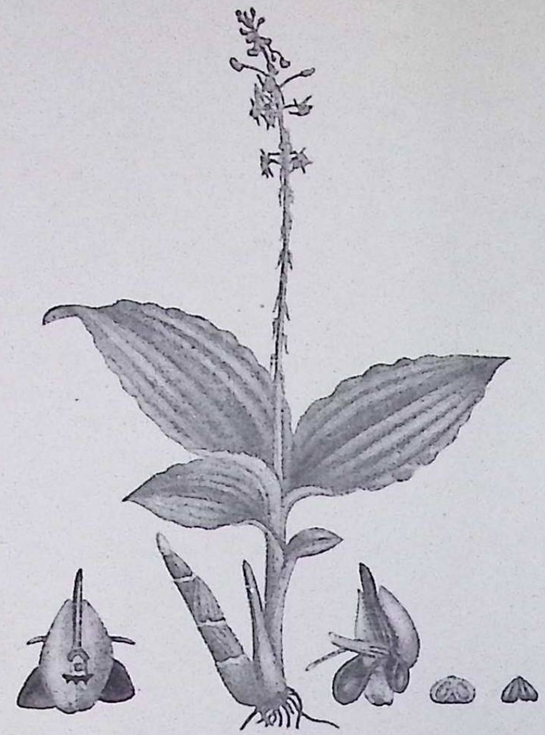
Megacarpaea polyandra Benth. (Barmoola) Page No. 13



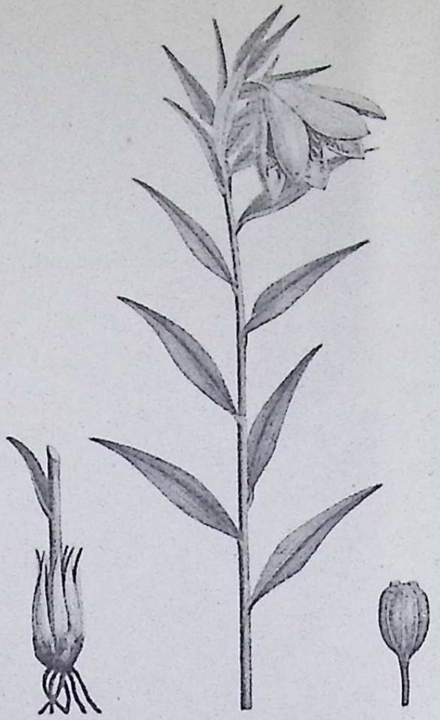
THALICTRUM FOLIOLOSUM DC.



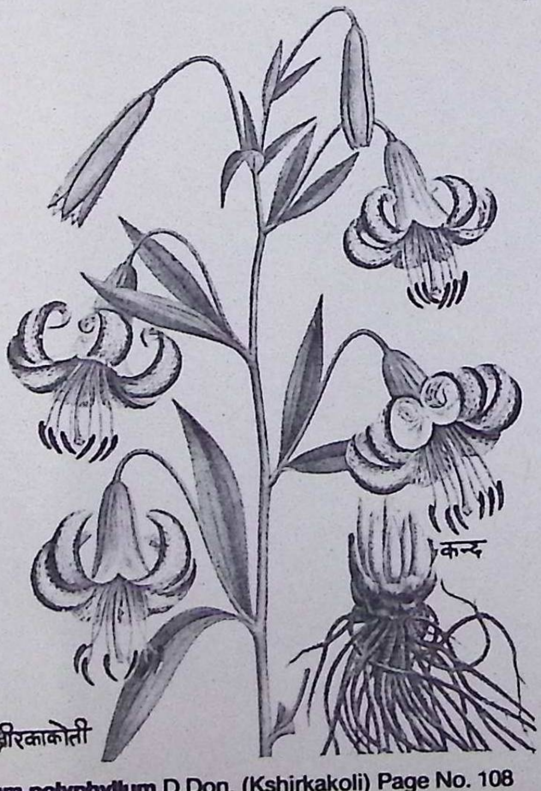
CLEMATIS NAPAULENSIS HEYNE.



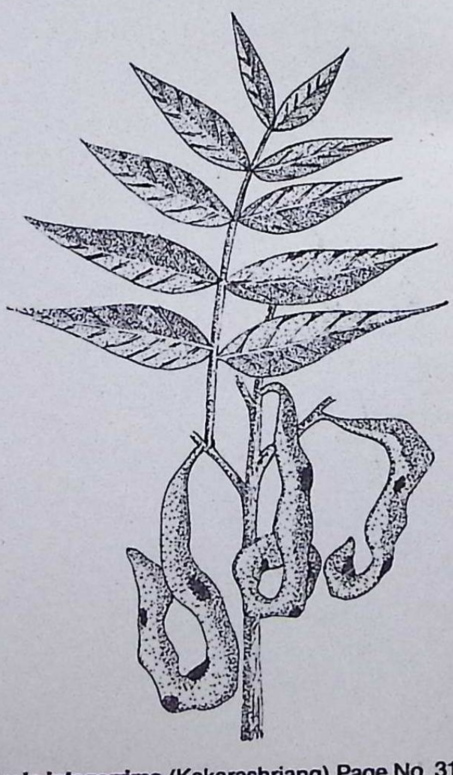
Microstylis wallichii Lindl. (Rishbak). Page No.104



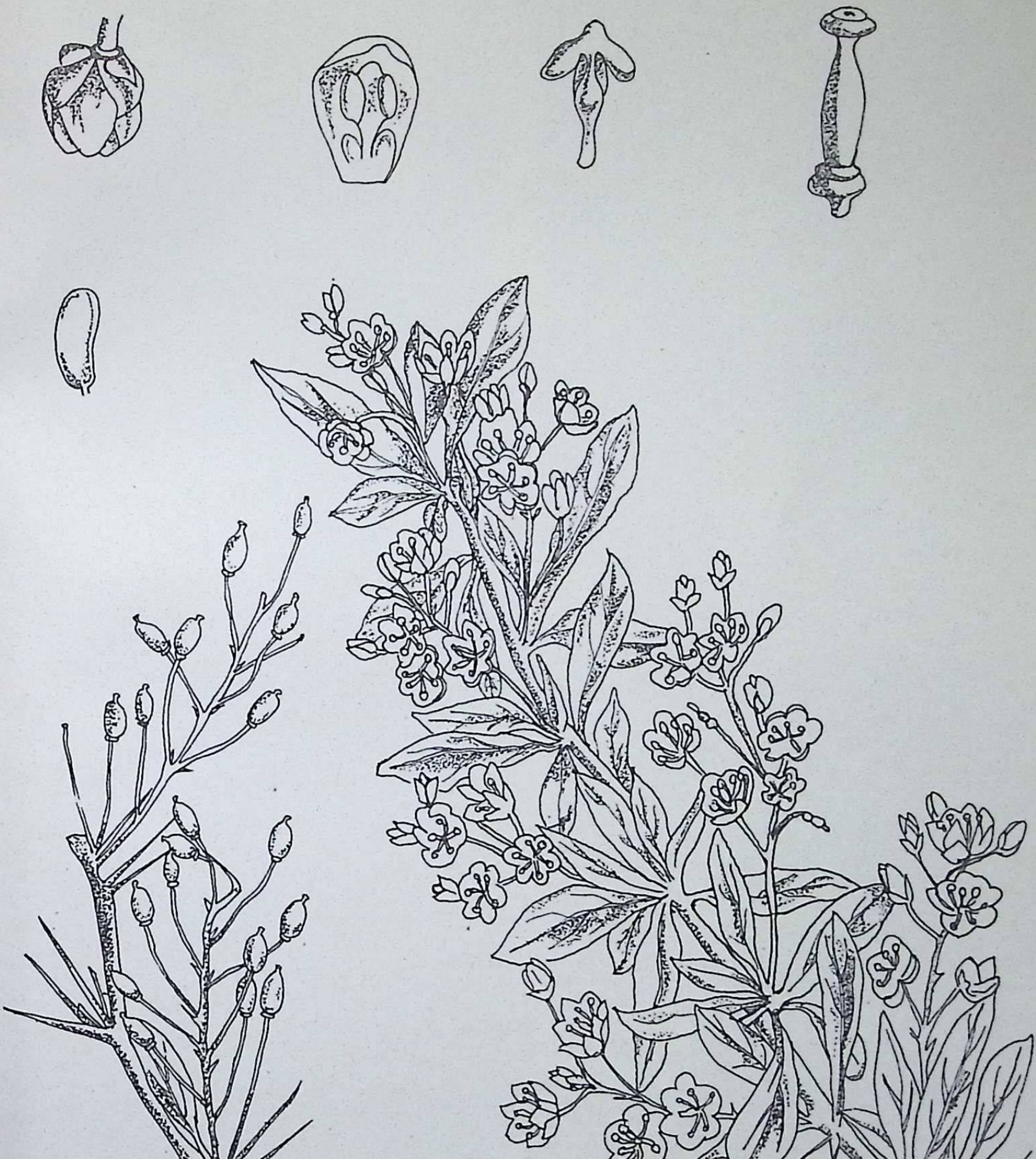
Fritillaria Oxypetala Royle (Kakoli) Page No. 108



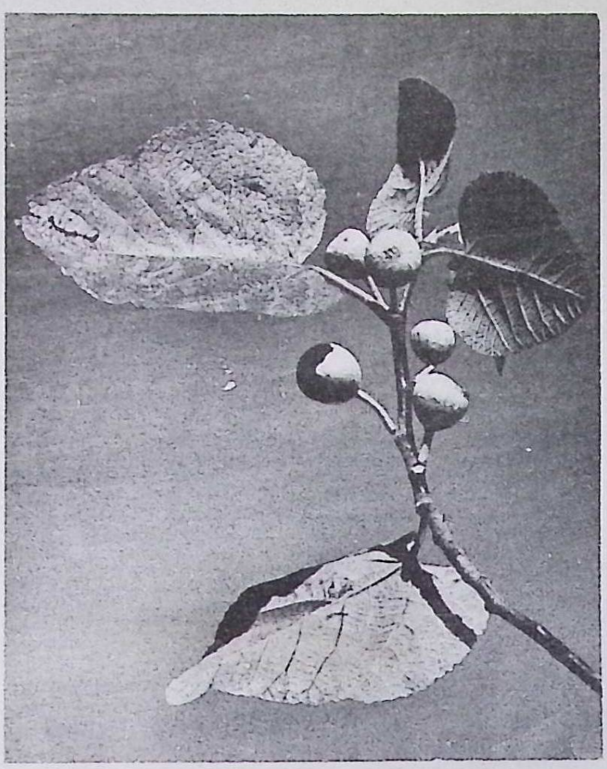
Lilium polyphyllum D.Don. (Kshirkakoli) Page No. 108



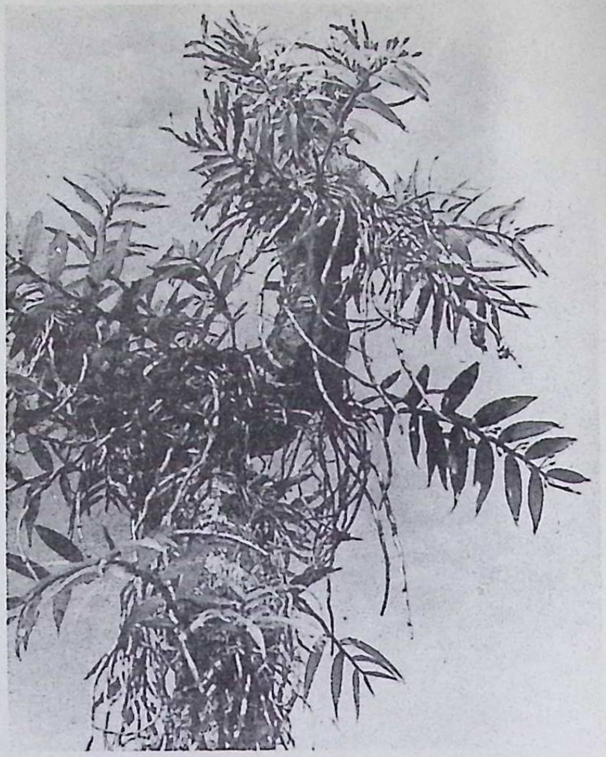
Pistacia integerrima (Kakarashriang) Page No. 31



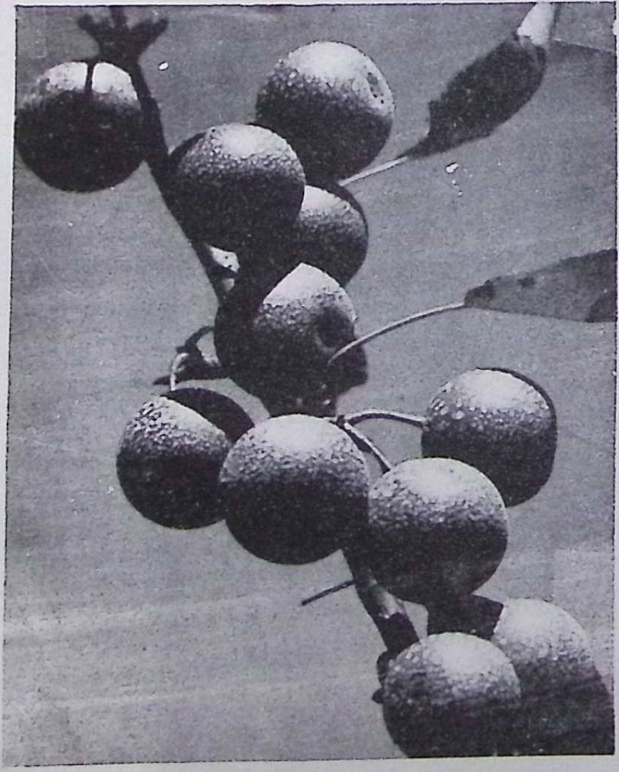
BERBERIS LYCIUM ROYLE.



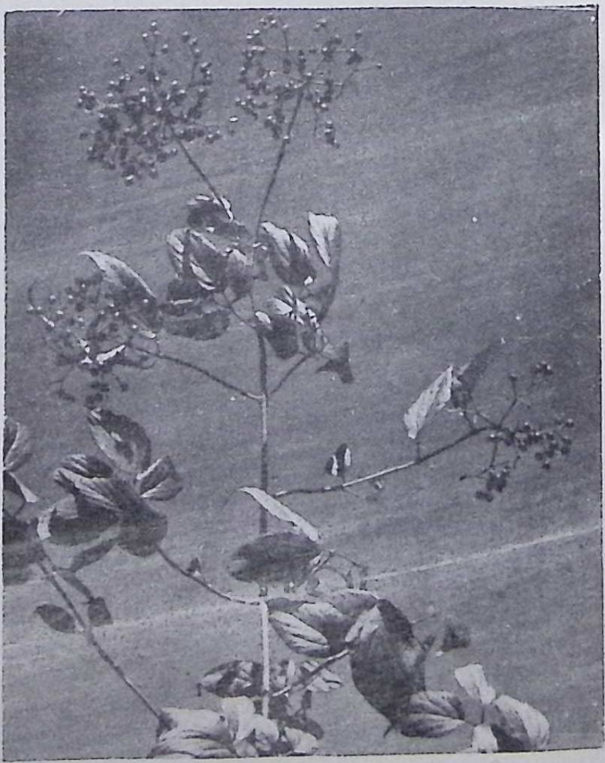
Ficus cunia Ham. (Anjer) Page No. 99



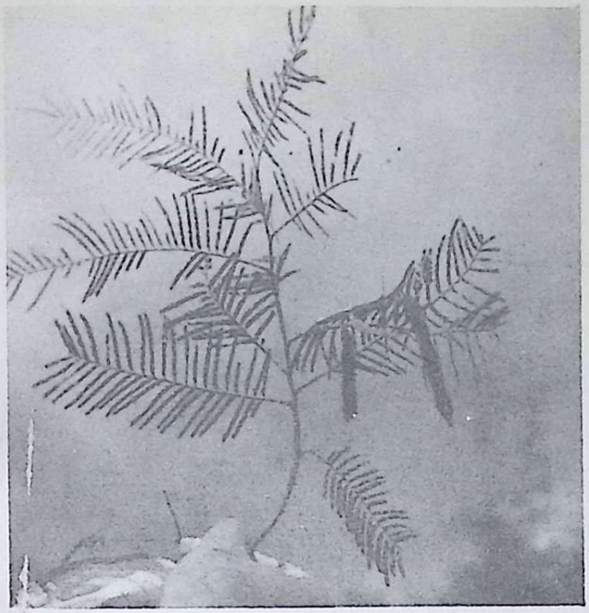
Dendrobium Sp. Page No. 102



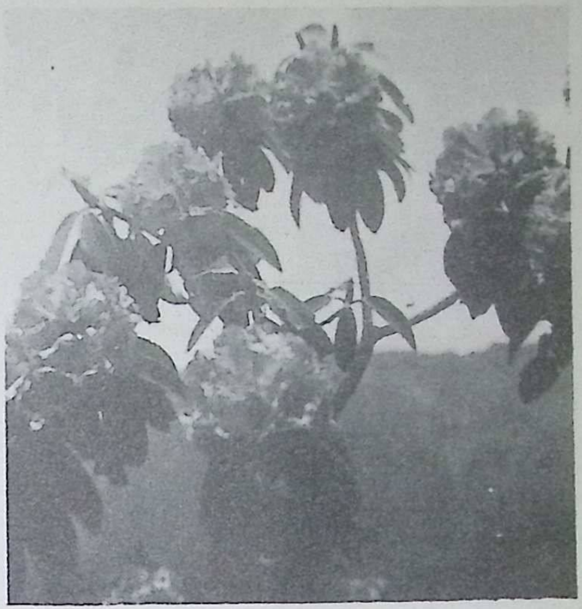
Pyrus pashia Ham. (Mehal) Page No. 43



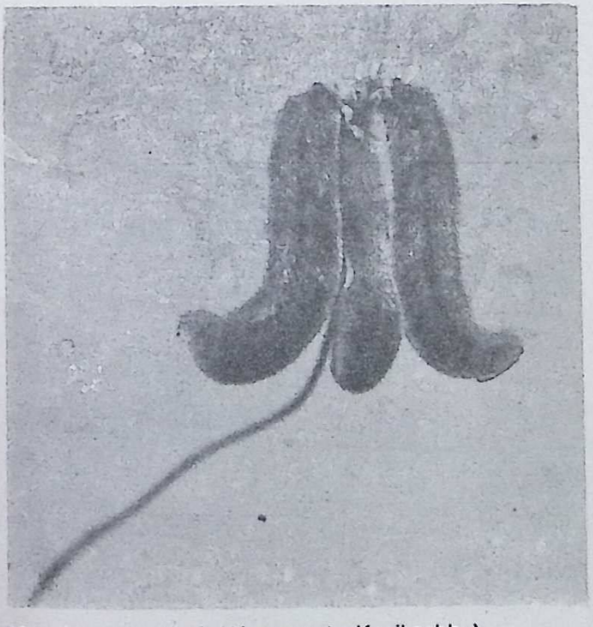
Hydrangea altissima Wall (Kakmara) Page No. 46



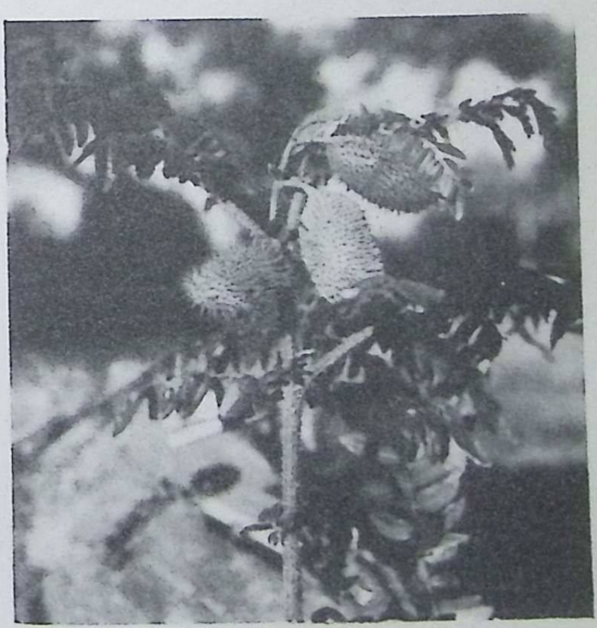
Acacia caetechu Willd, (Khadir) Page No. 40



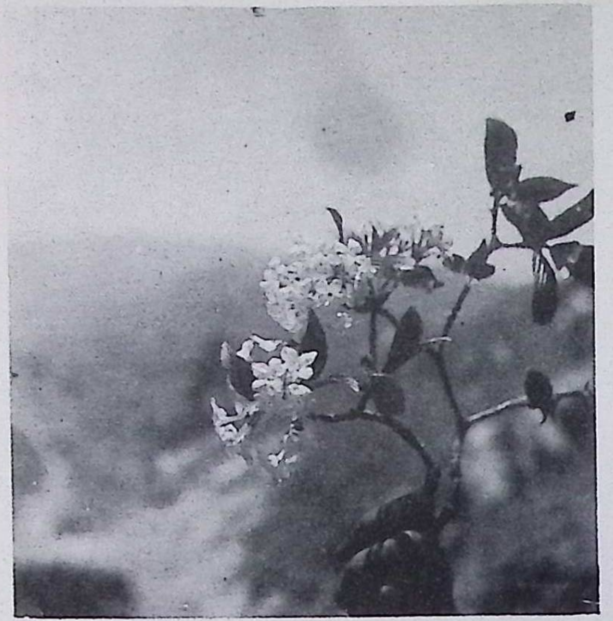
Rhedodendron campenulatum D. Don./Atarasu (Simaru) Page No. 65



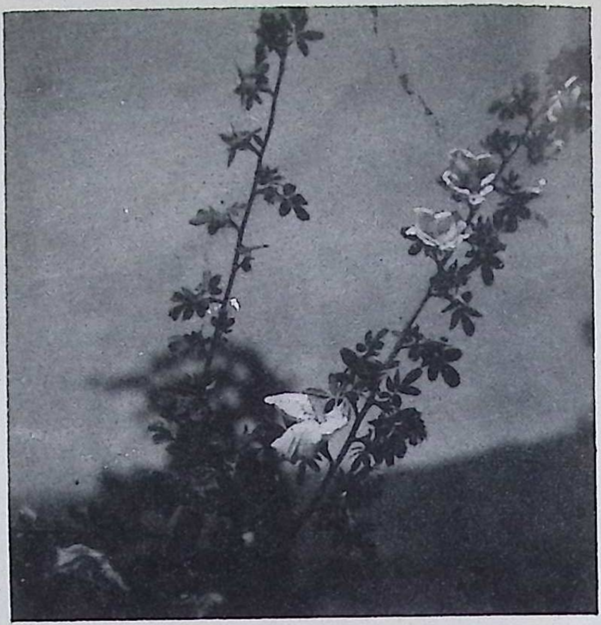
Mucula prurita Hook (Alamgupata, Kapikachhu) Page No. 35



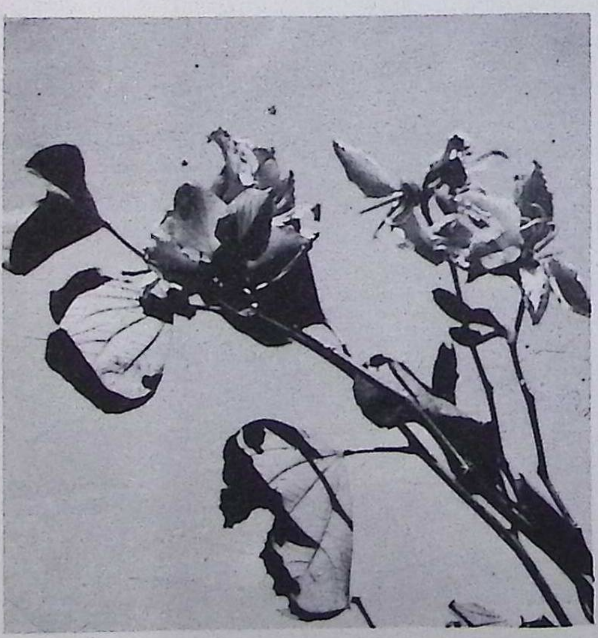
Caesalpinia cristata Linn. (Lata Karanja) Page No. 3 8



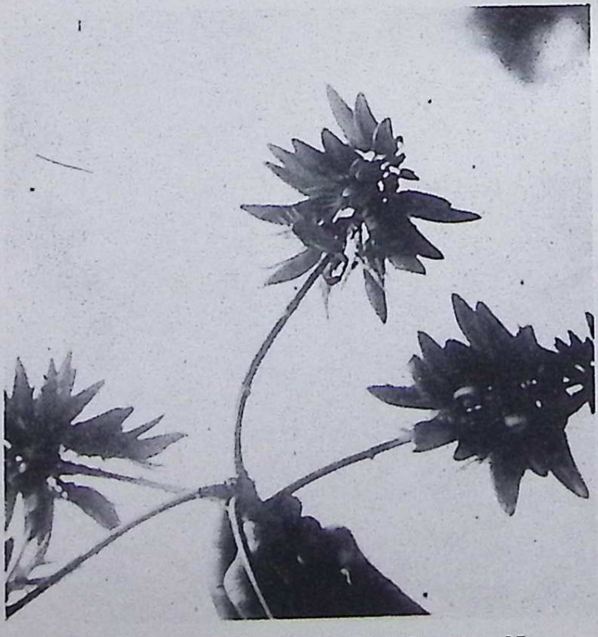
Viburnum nervesum D. Don. (Tilvaka) Page No. 57



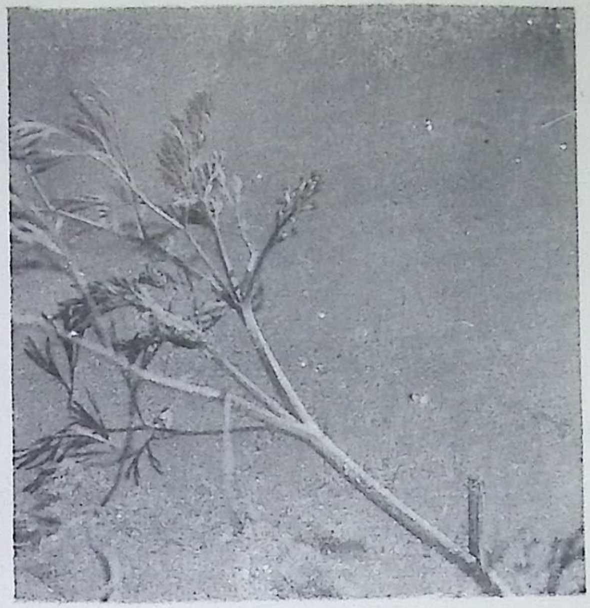
Rosa sericea lindl. (Jangali-Gulab) Page No. 43



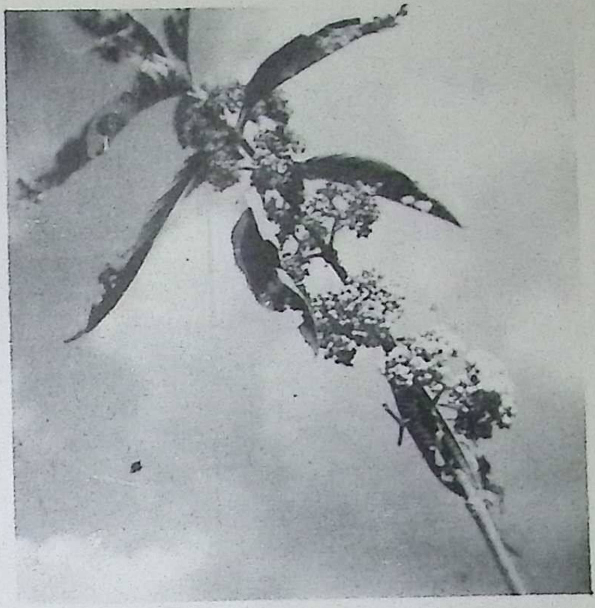
Bauhinia variegata Linn. (Kanchanara) Page No. 38



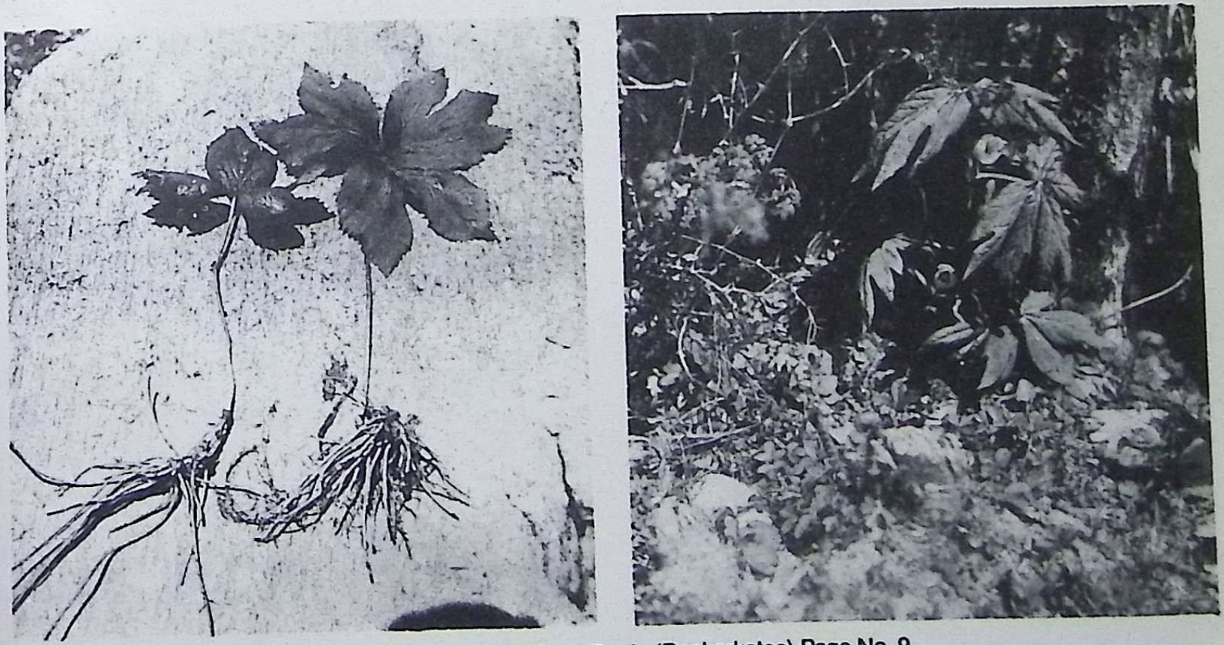
Erythrina suberoso-Roxb. (Paribhadar) Page No. 35



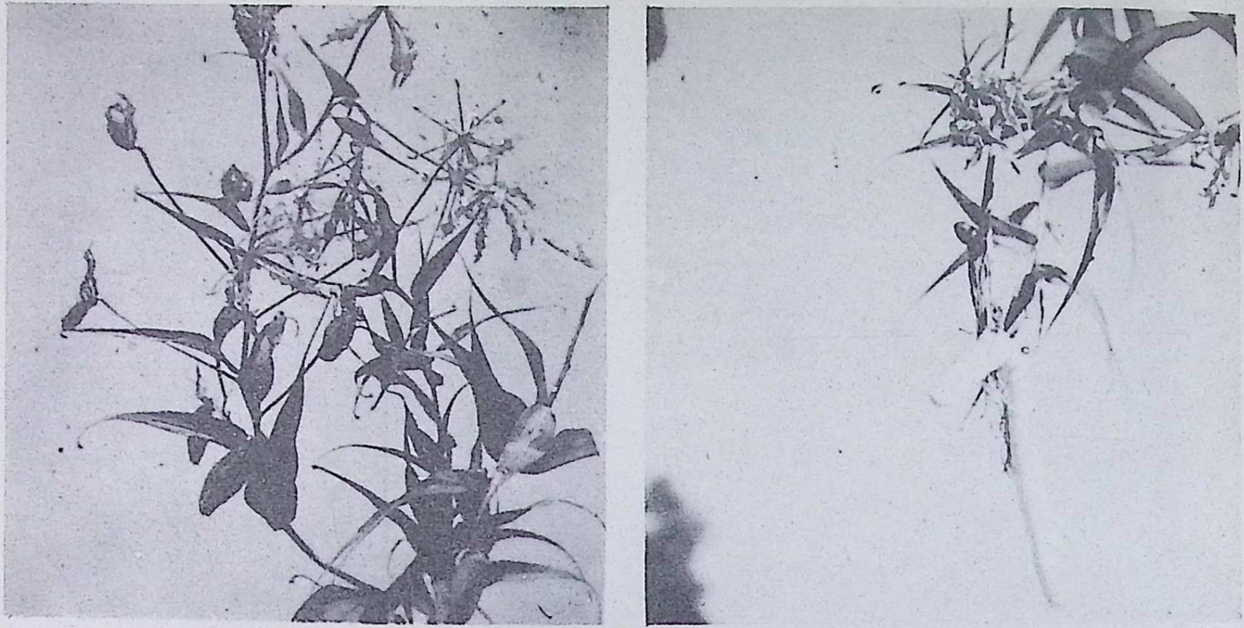
Fumaria indica pugsley (Parpata) Page No. 11



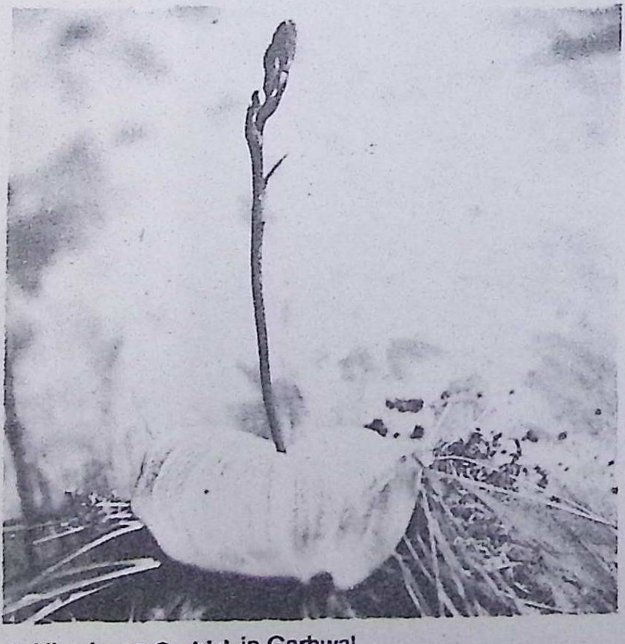
Callicarpa macrophylla vahl. (Priyangu) Page No. 81



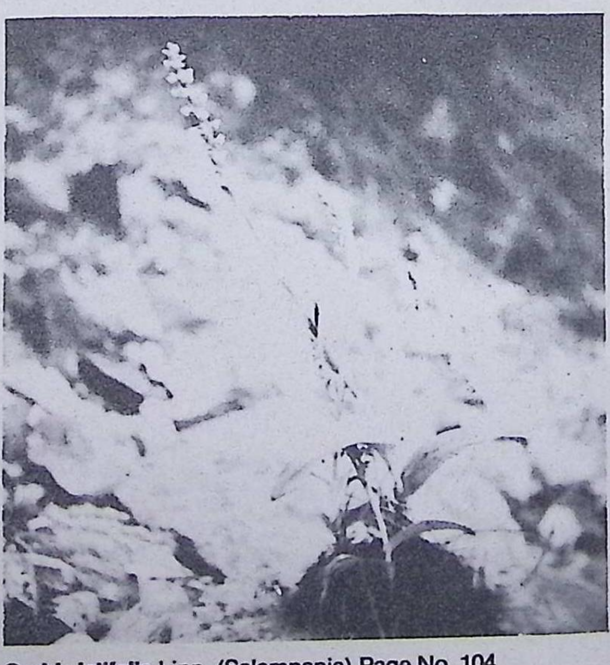
Podophyllum hexandrum Royle (Bankarkatee) Page No. 9



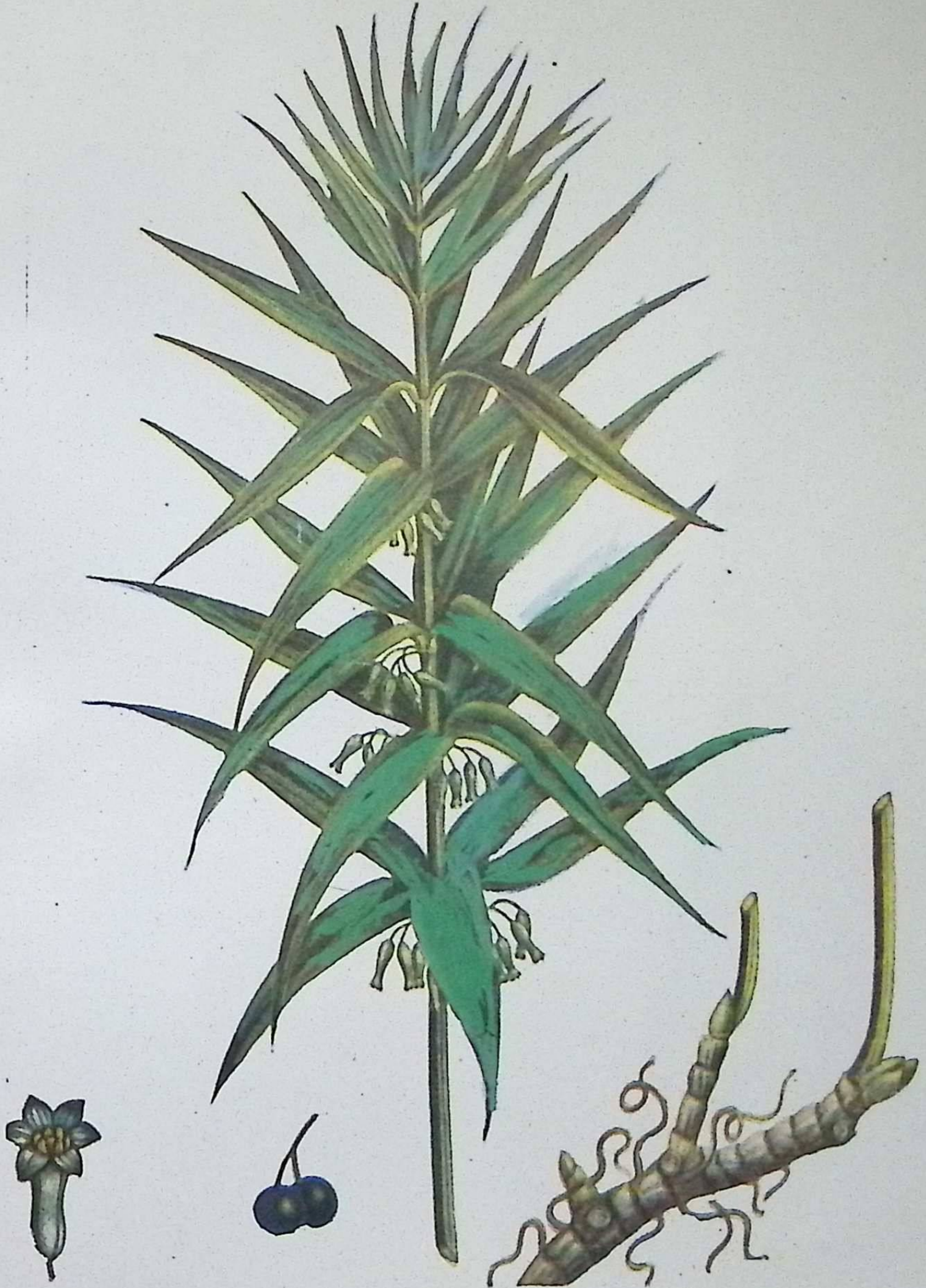
Gloriesa superba Linn. (Langalee) Page No. 108



A **Himalayan Orchid** in Garhwal.

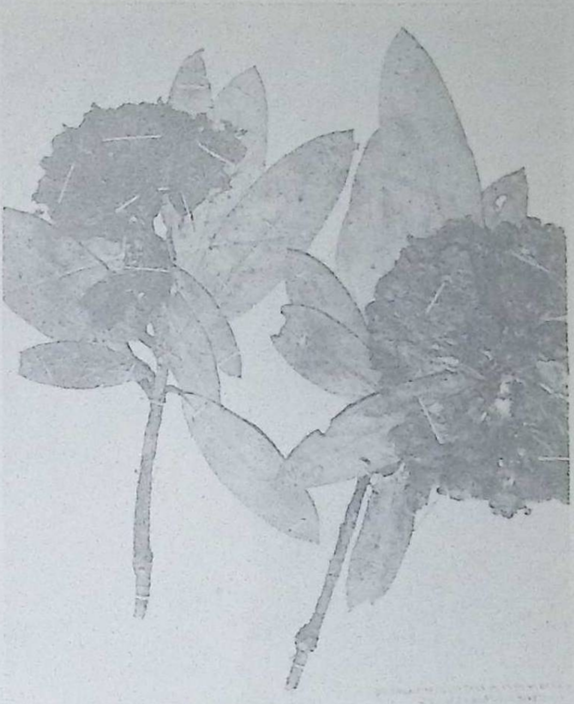


Orchis latifolia Linn. (Salampanja) Page No. 104

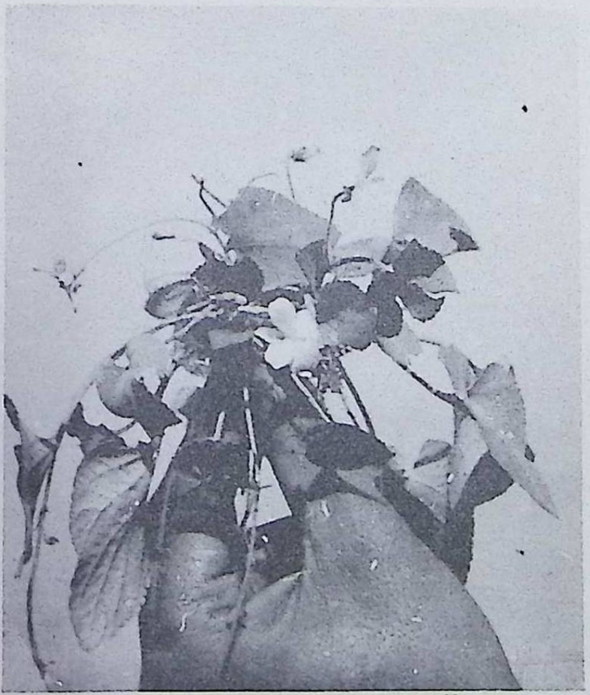


Polygonatum verticillatum

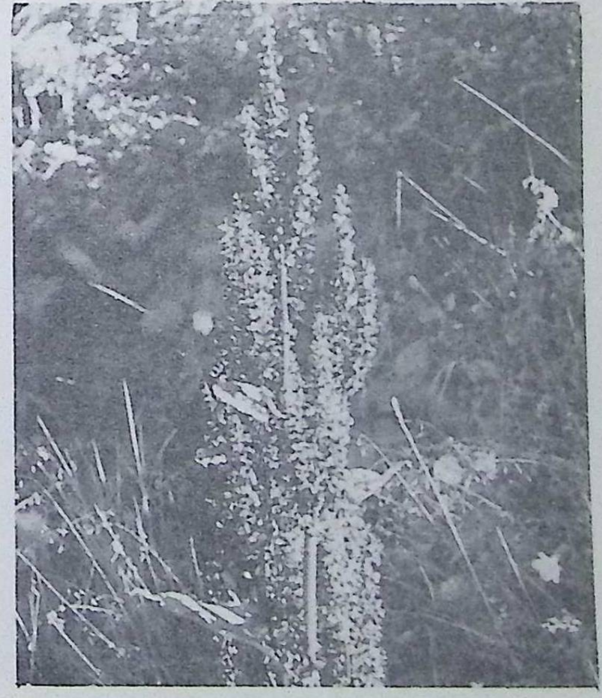
Bergenia ligulata (Pashanbhed) Page No. 44



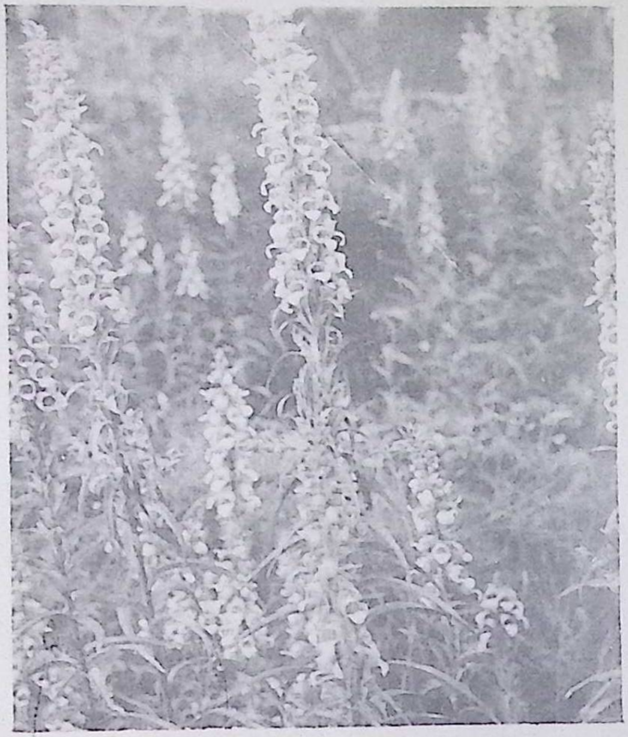
Rhododendron arboreum Sm. (Kurubaka) Page No. 65



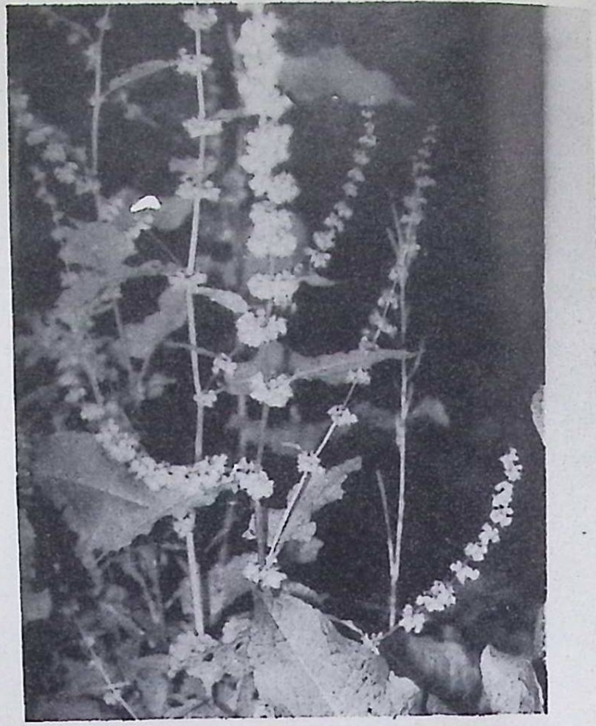
Viola serpens Wall (Gul Benapsha) Page No. 14



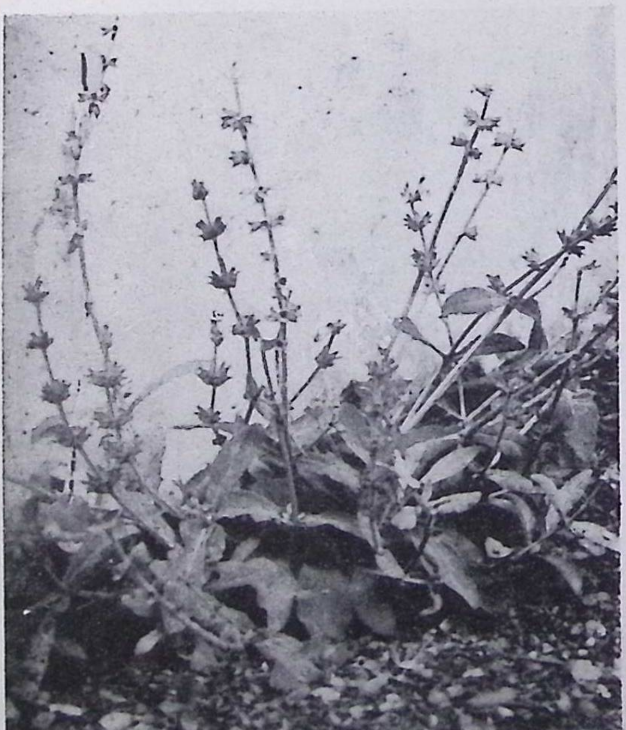
Rheum webbianum Royle (Dhelu) Page No. 9.1



Digitalis lanata Erth, (Hrita Patri) Page No. 78

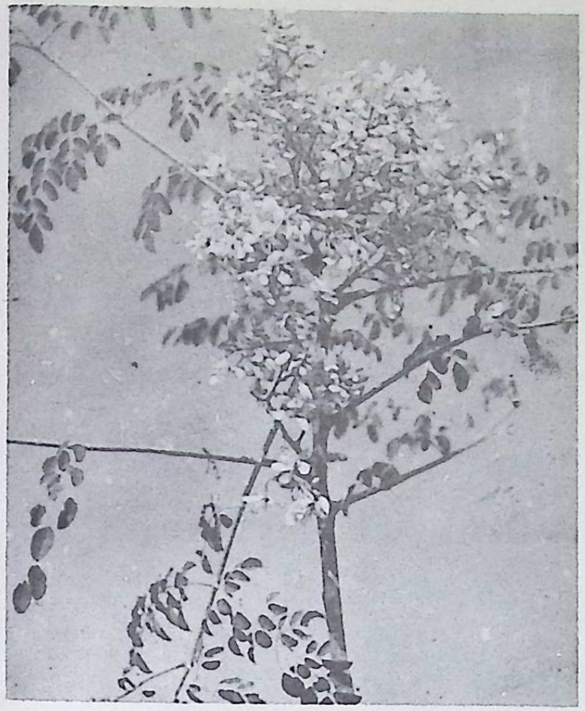


Polygonum chinense Linn. Page No. 90

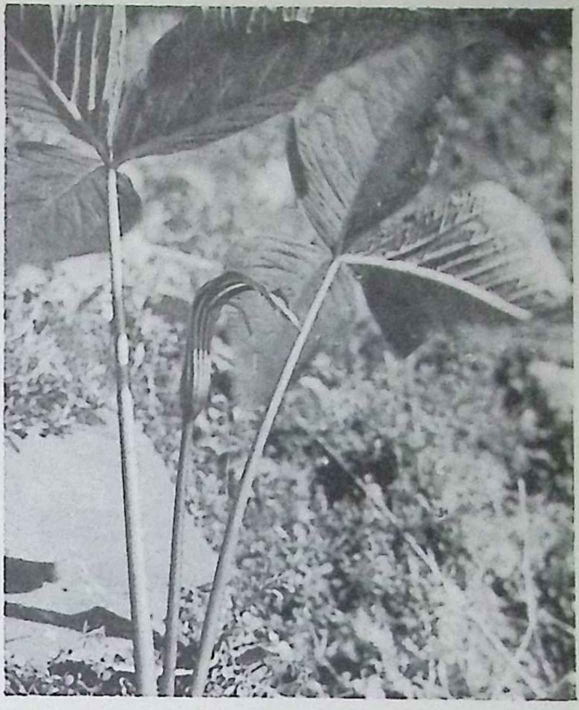


Salvia lanata Roxb. Page No. 86

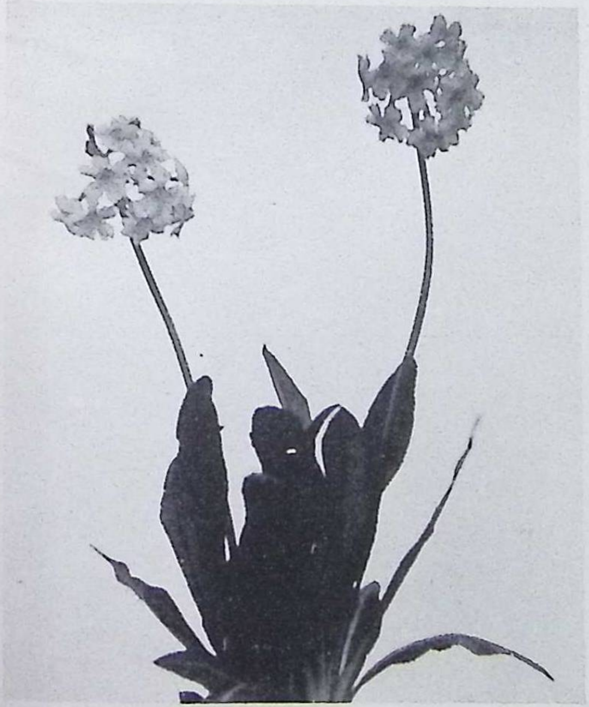
Cedrus deodara (Roxb) Loud, (Devdar) Page No. 111



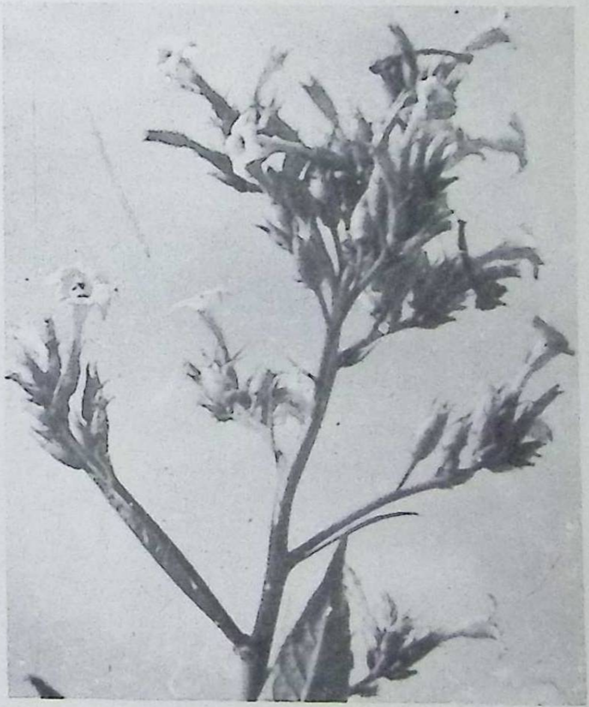
Moringa lengifolia Wall ex D.C. (Shigru) Page No.5 8



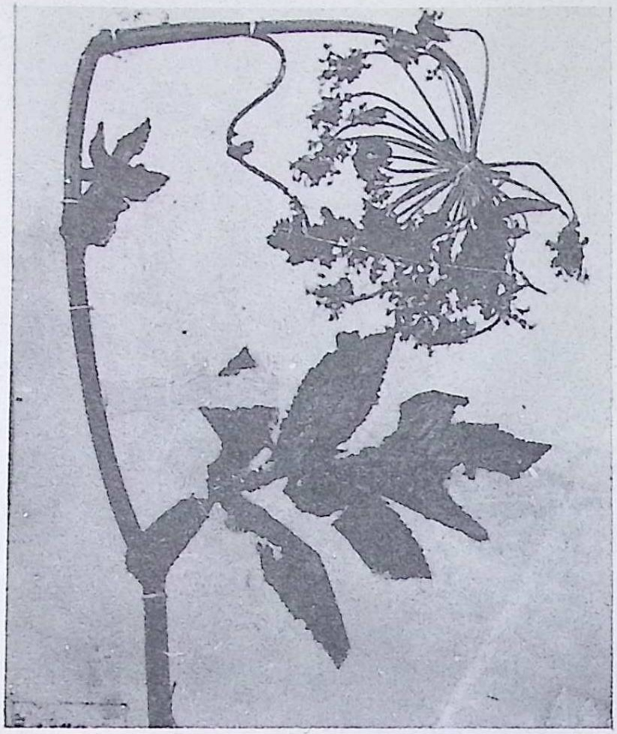
Arisaema tortusum Wall (Sarpa) Page No. 110



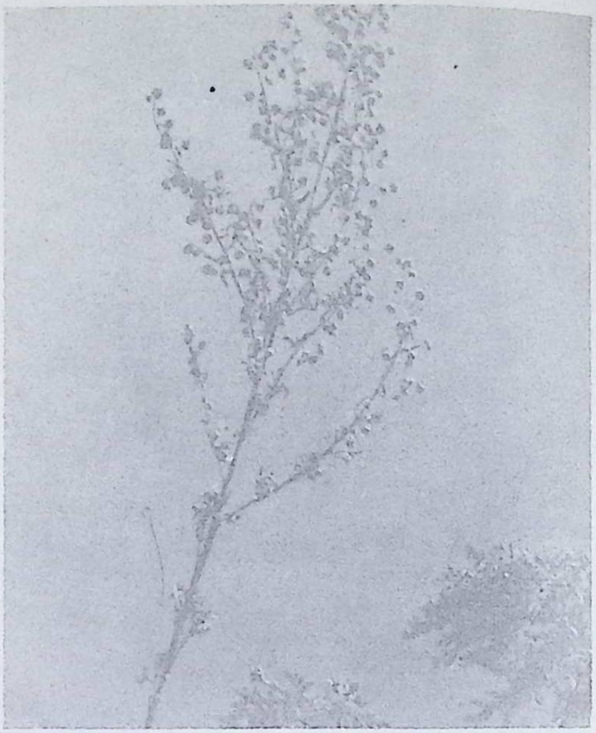
Primula denticulata Sm. Page No. 67



Nicotiana Tabacum Linn. (Tambaku) Page No. 77

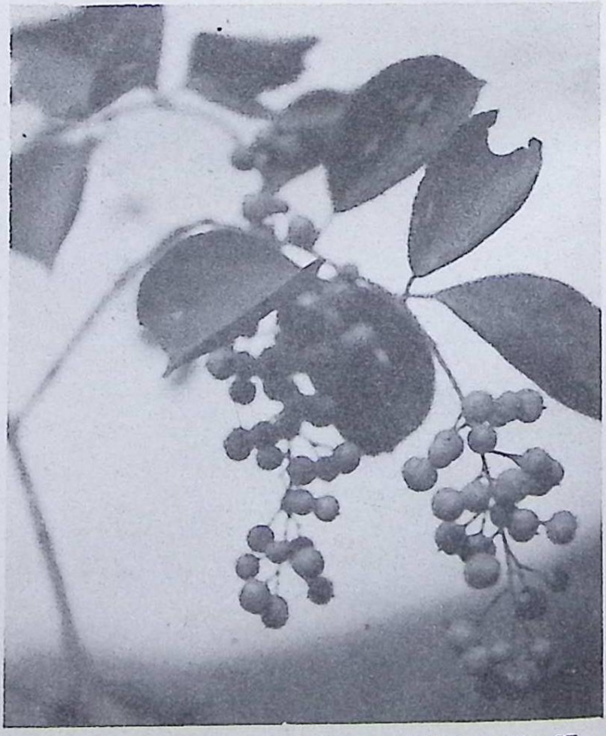


Heracleum canescens Linal. Page No. 52



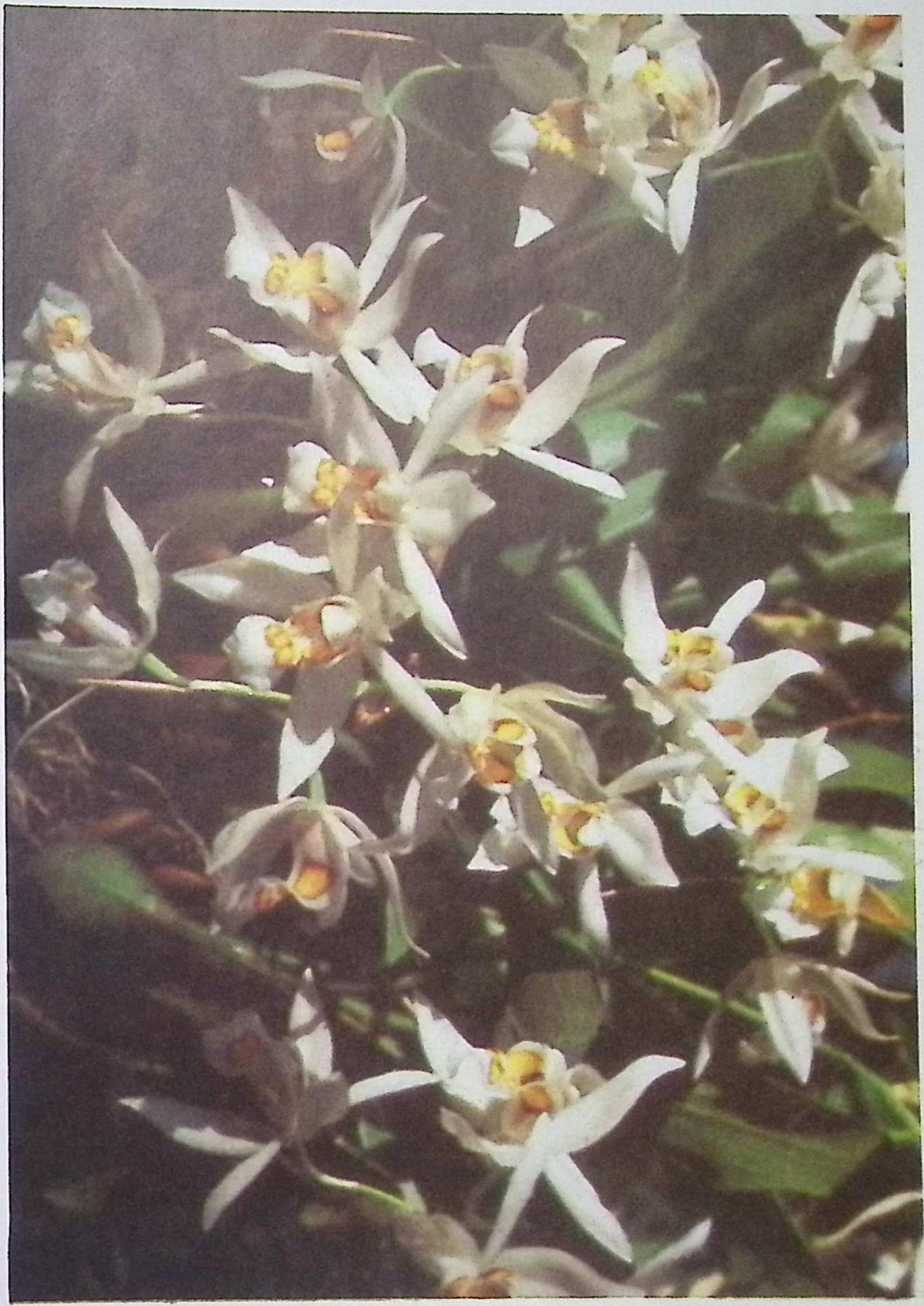
Artemisia sacrorum lede. f. (Ganga Tulsi)
(Keeta Mari) Page No. 59

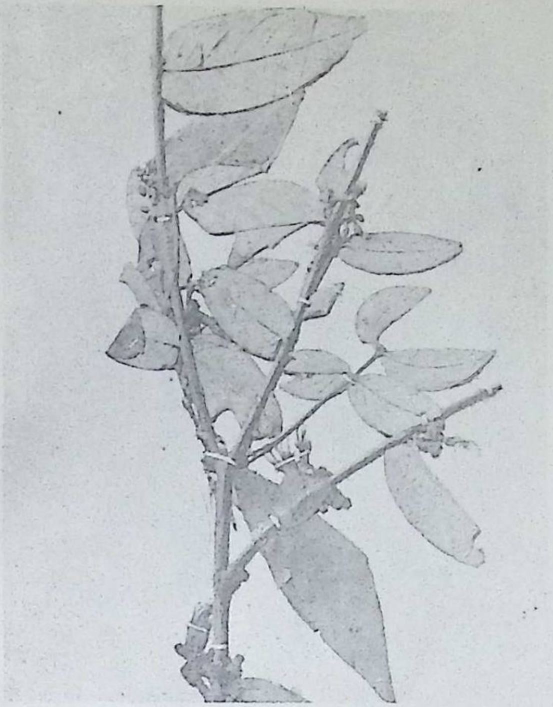
Baliospermum montanum Muell (Dantee) Page No. 95



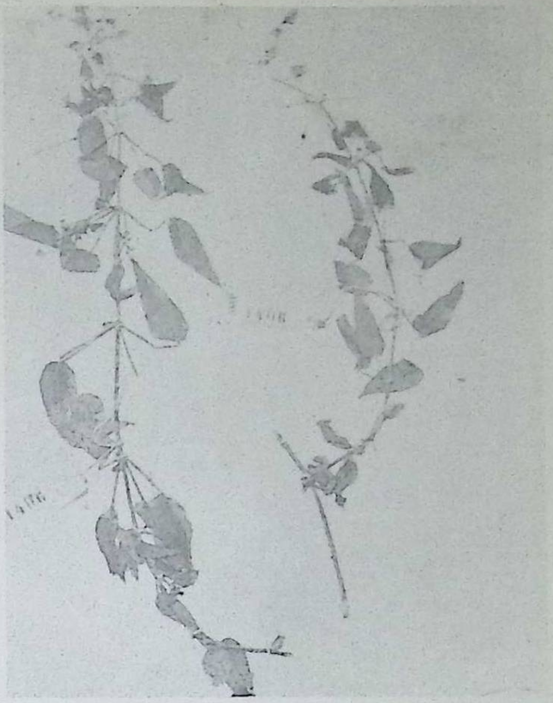
Celastrus paniculatus Willd (Malka Kini) Page No. 27

INTERESTING ORCHIDS OF GARHWAL HIMALAYAS

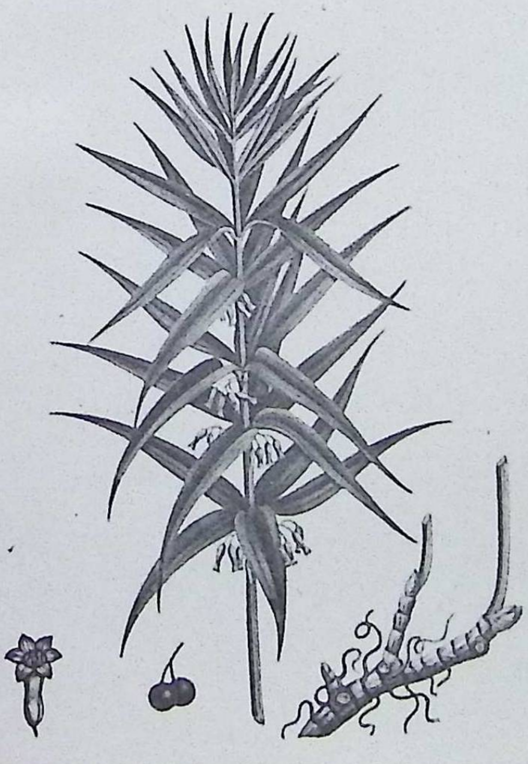




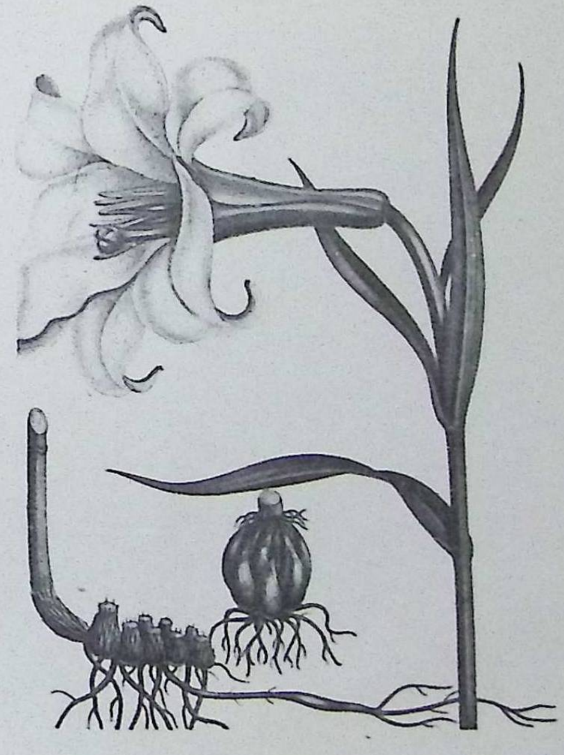
Woodfordia fruticosa Kurz (Dhatakee) Page No. 47



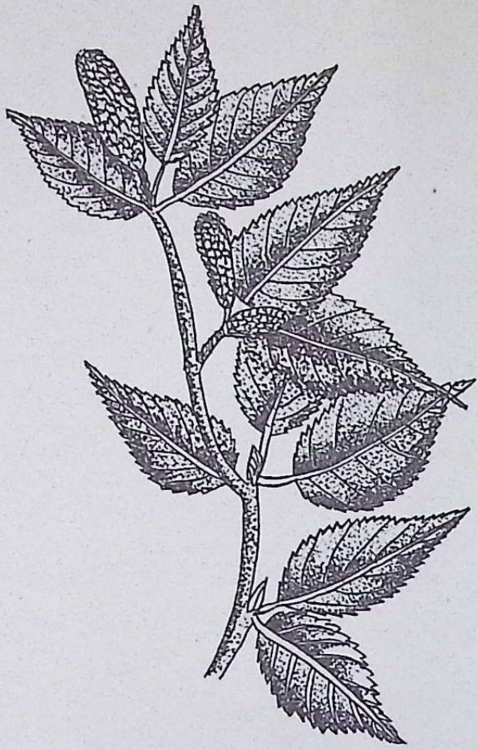
Rubia cordifolia Linn. (Manjeotha) Page No. 56



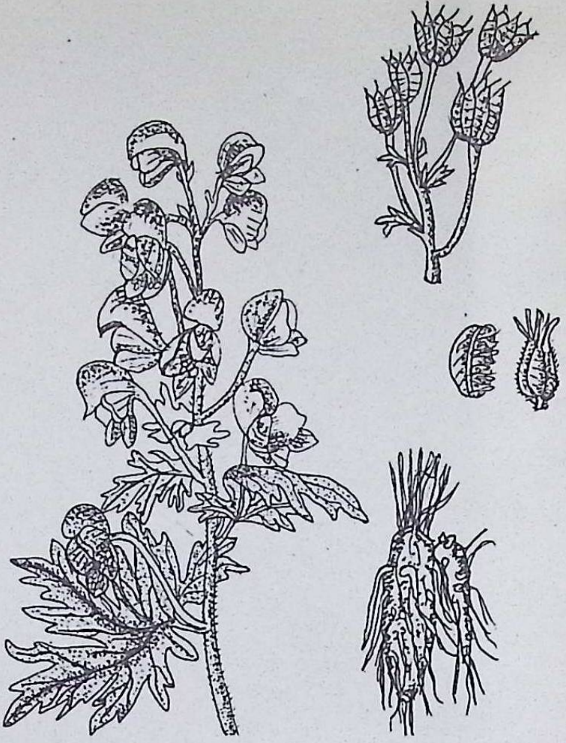
Polygonatum Verticillatum Allioni (Meda-Mehameda)
Page No. 109



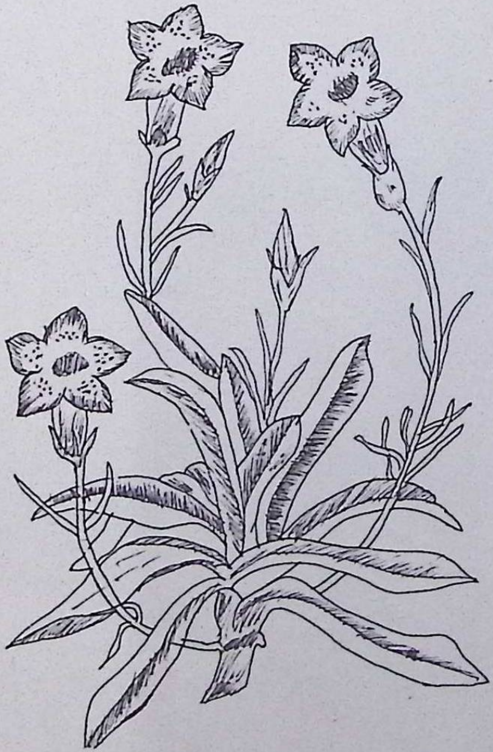
Lilium Wallichianum schult. f. (Ṣambavya Adityalbakta)
Page No. 109



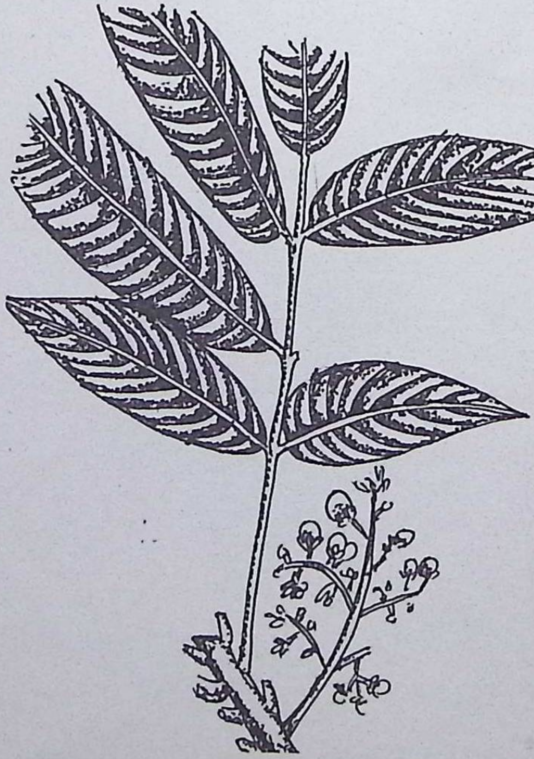
Betula utilis Don. (Bhoojja) Page No. 101



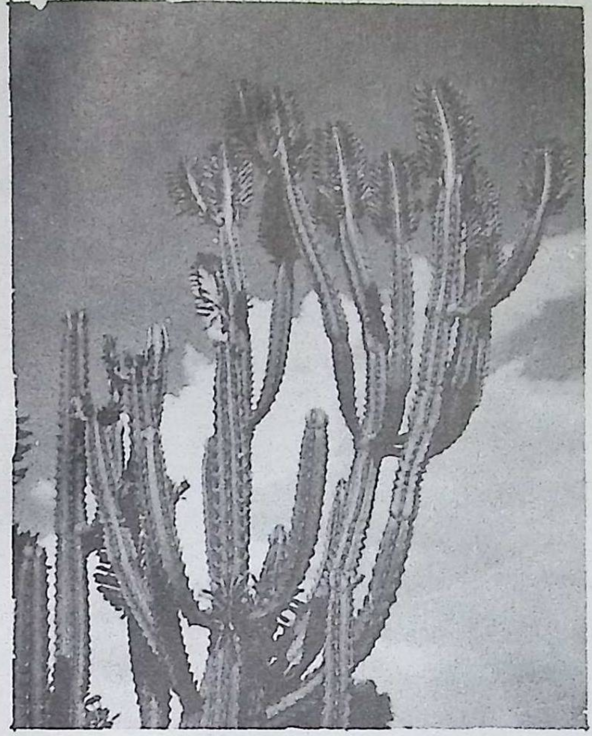
Aconitum ficoneri Stapf (Mitha Bis) Page No. 1



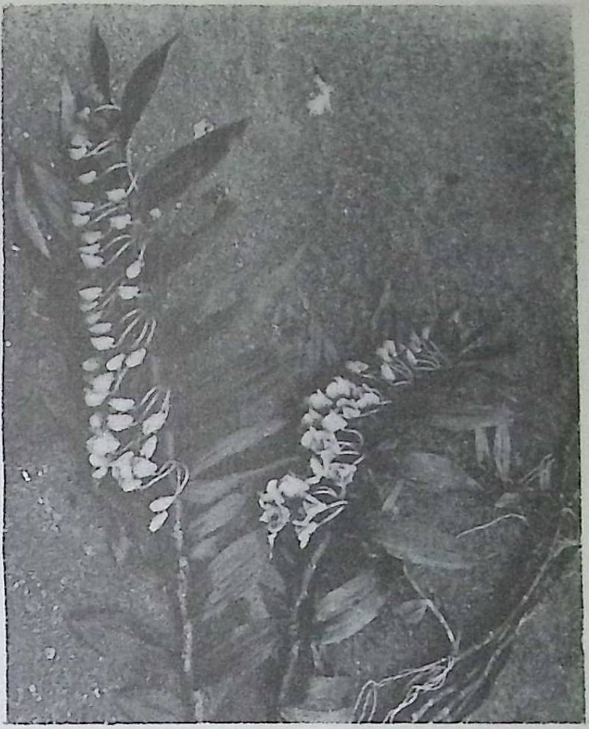
Gentiana Kurroo Royle (Trayman) Page No. 73



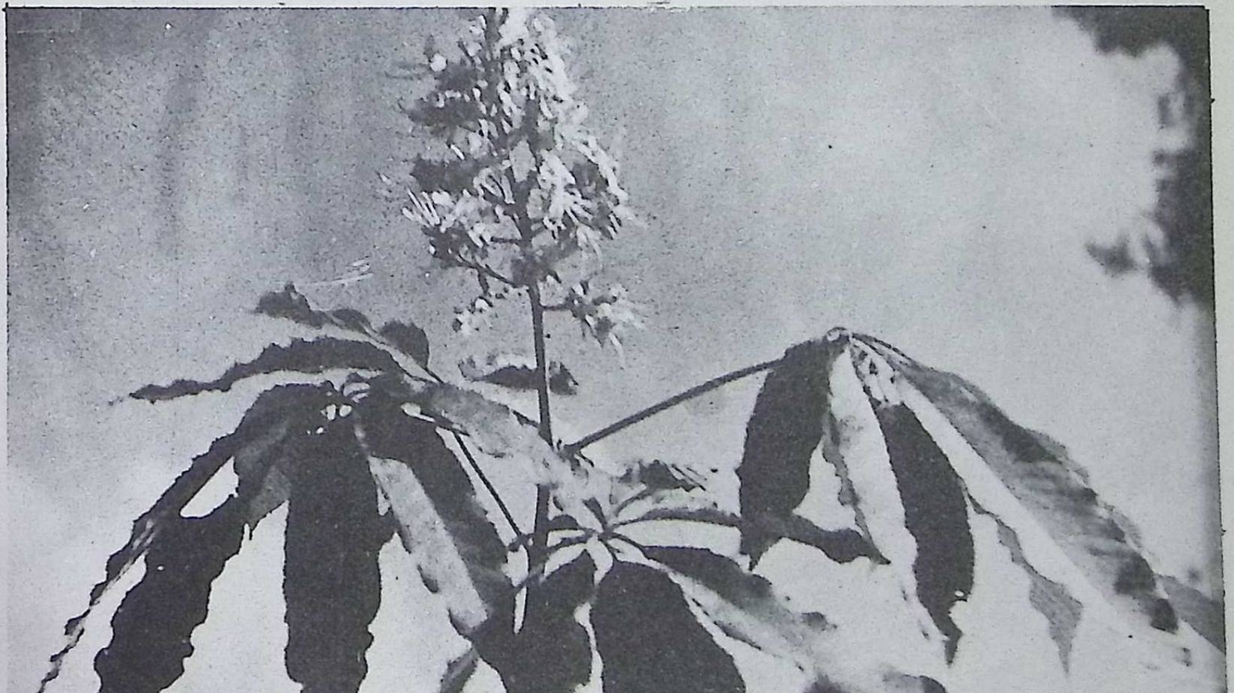
Rhus insiginis H00k. f. Page No. 31



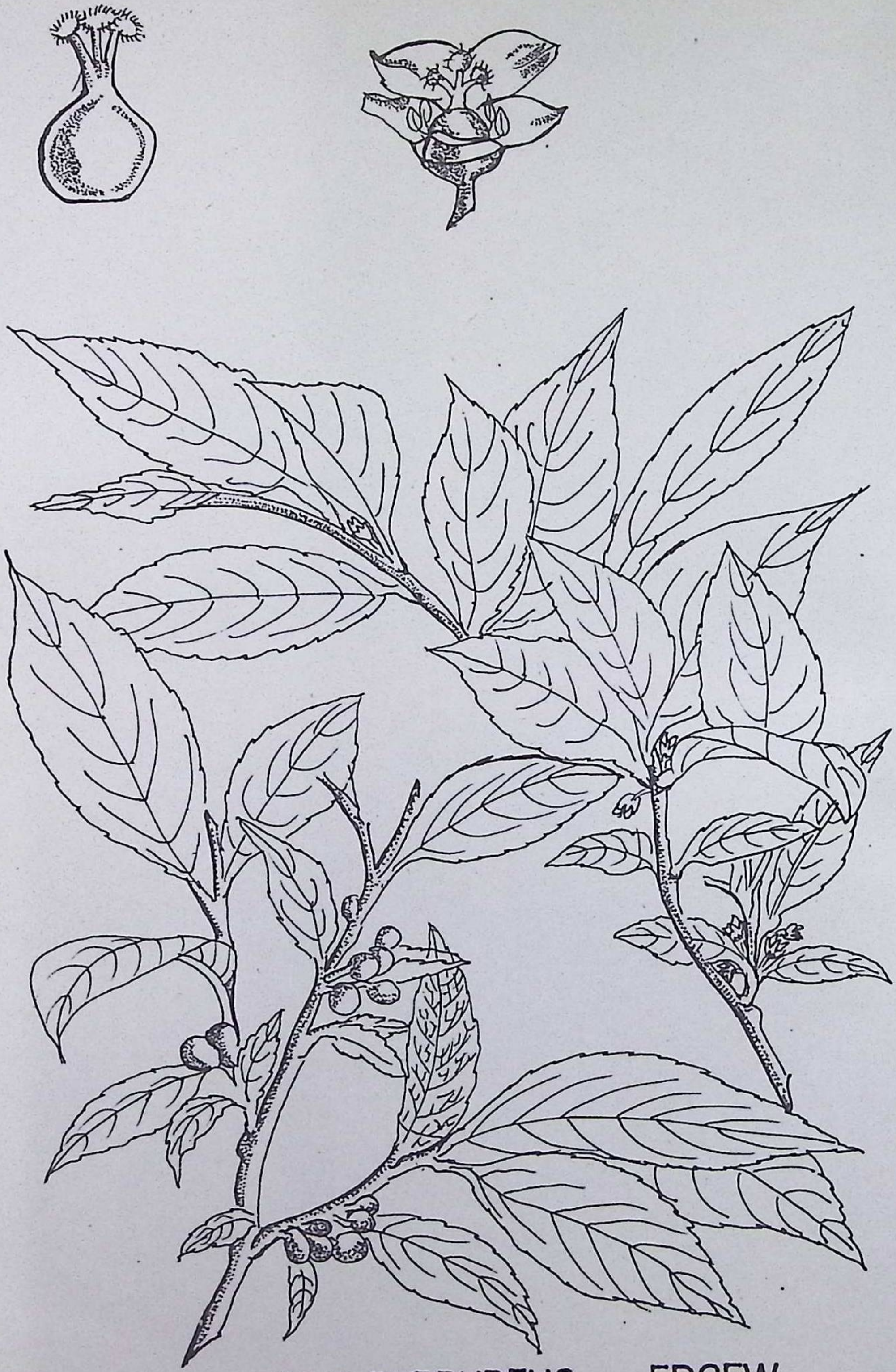
Eupherbia royleana boiss. (Shanuhi) Page No. 96



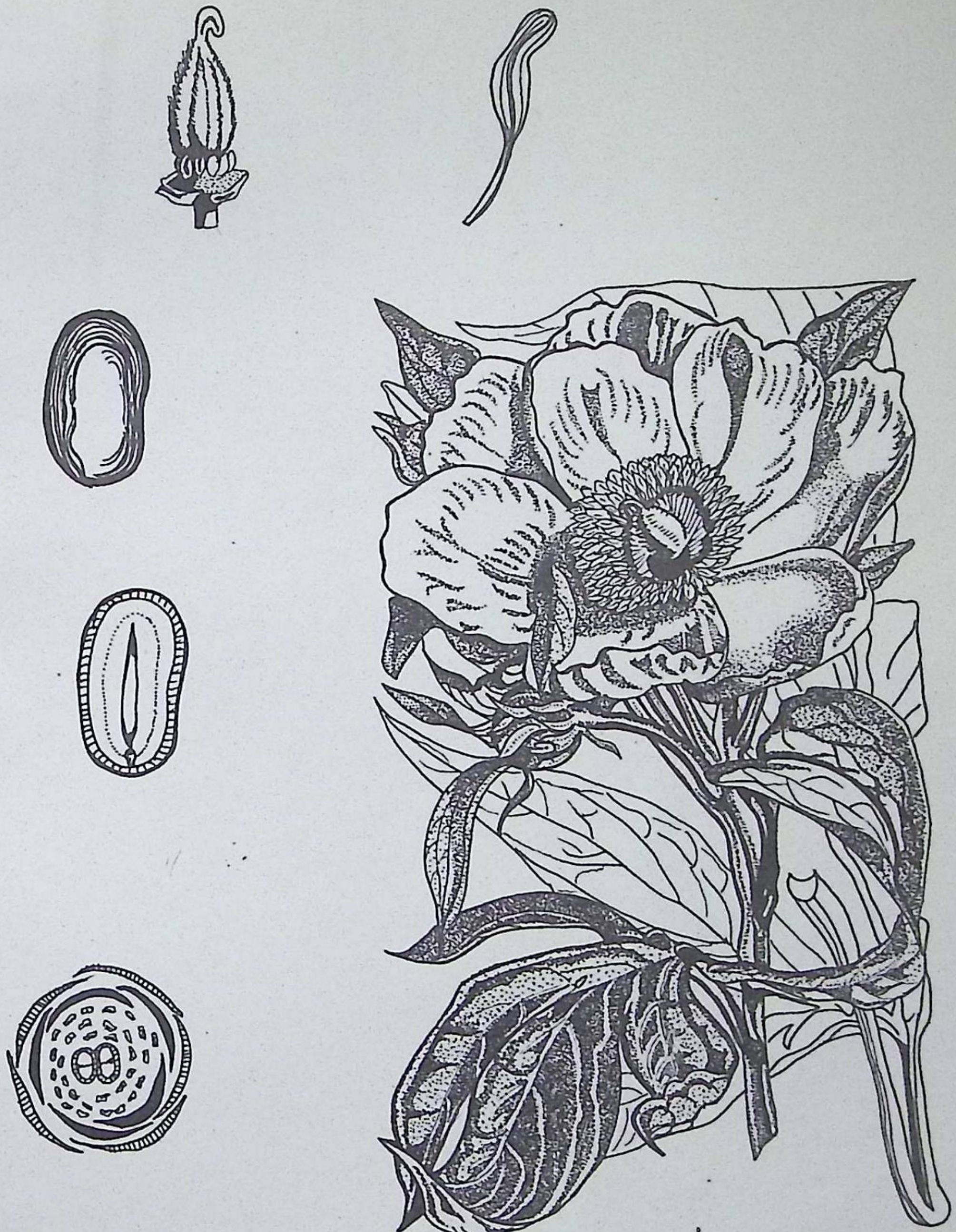
Dendrobium denciflora (Jeevantei) Page No. 112



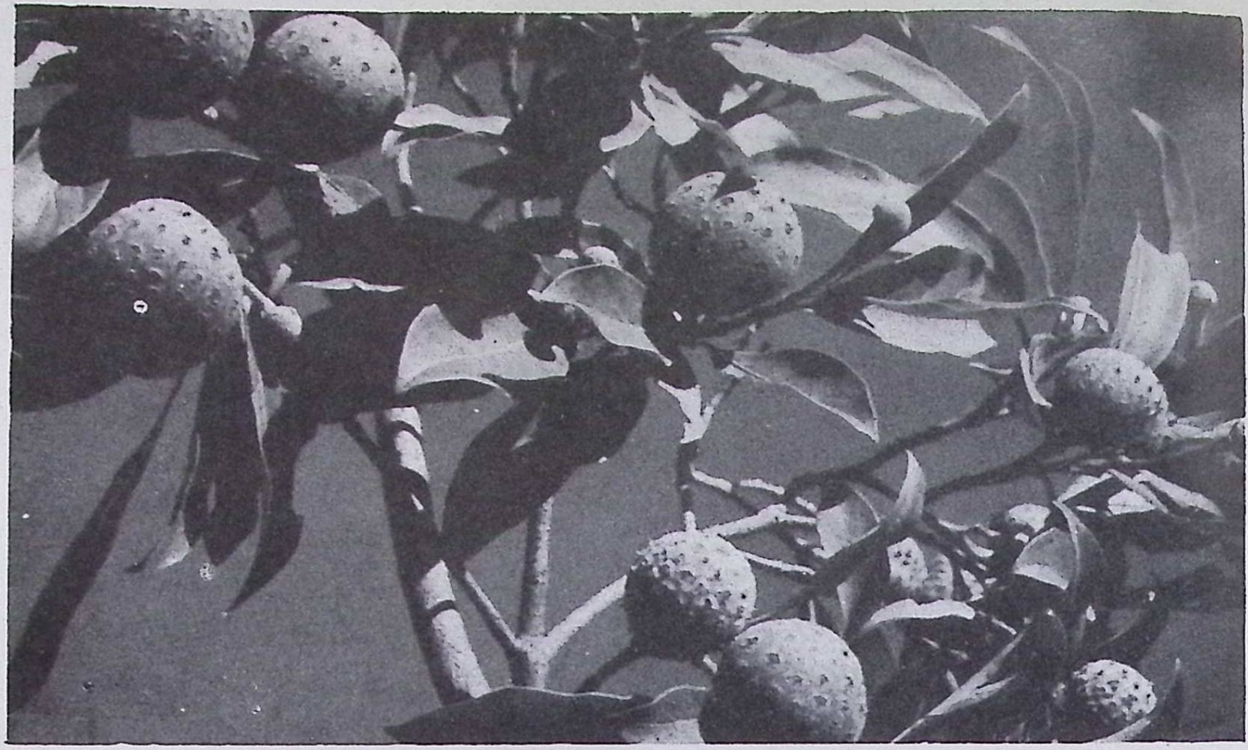
Aescules Indica celebr (Pangara) Page No. 30



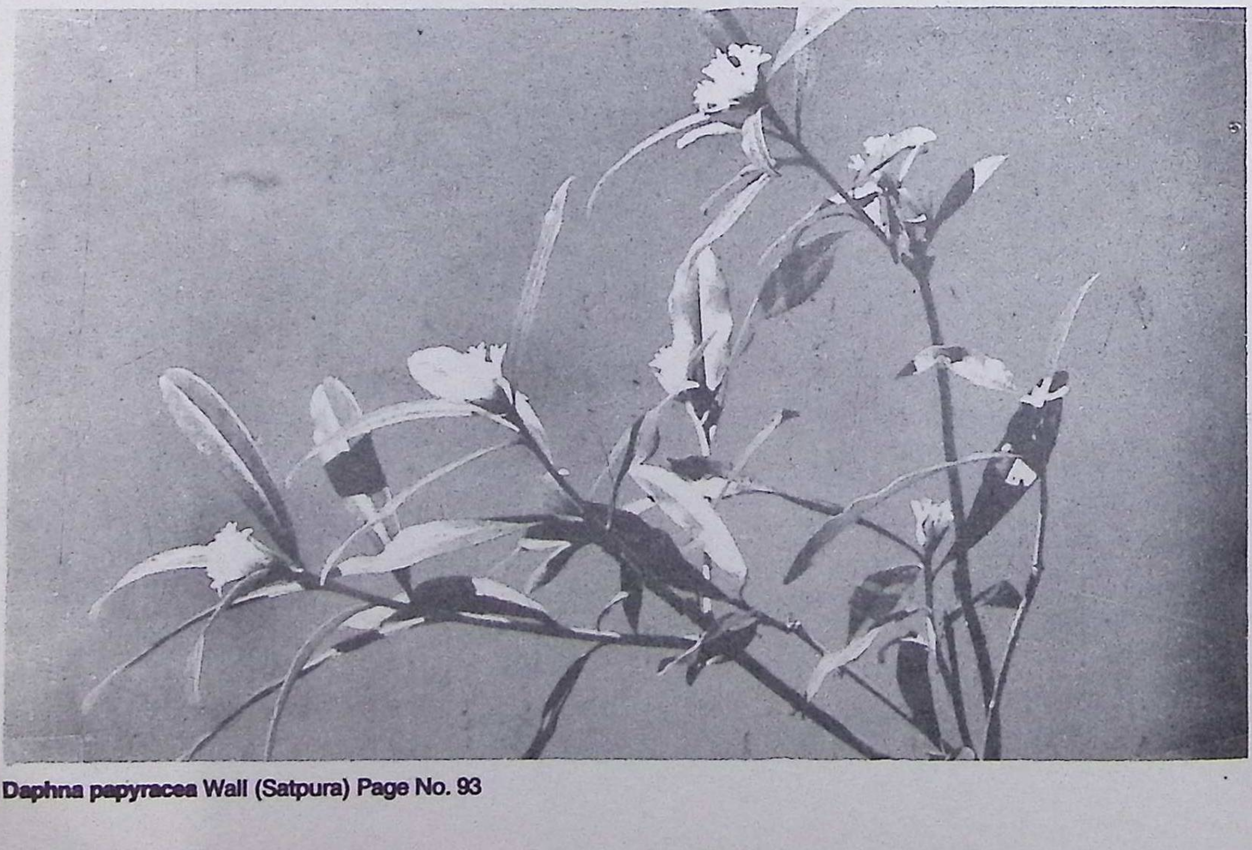
RHAMNUS PURPUREUS EDGEW.



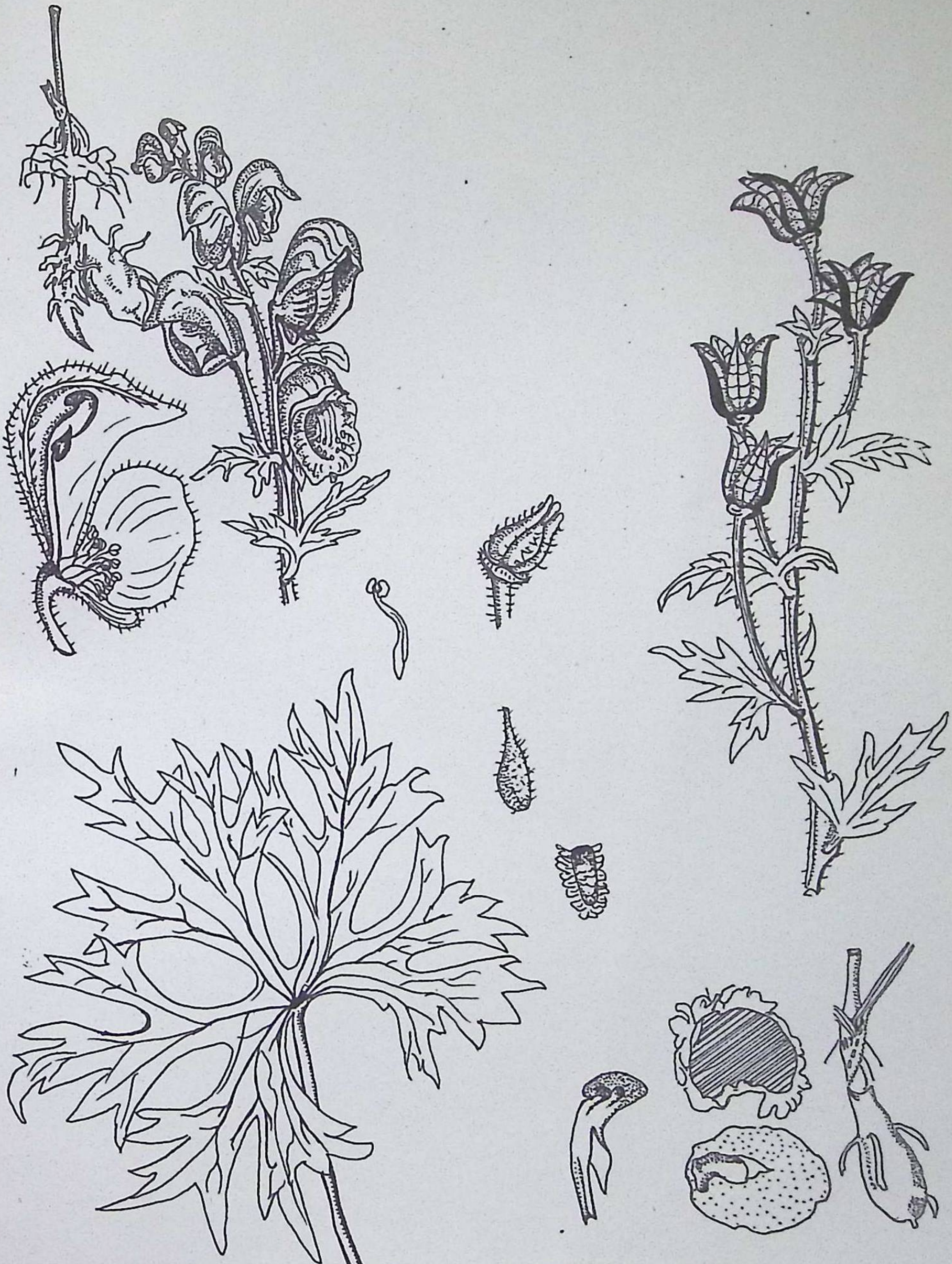
PAEONIA EMODI WALL.



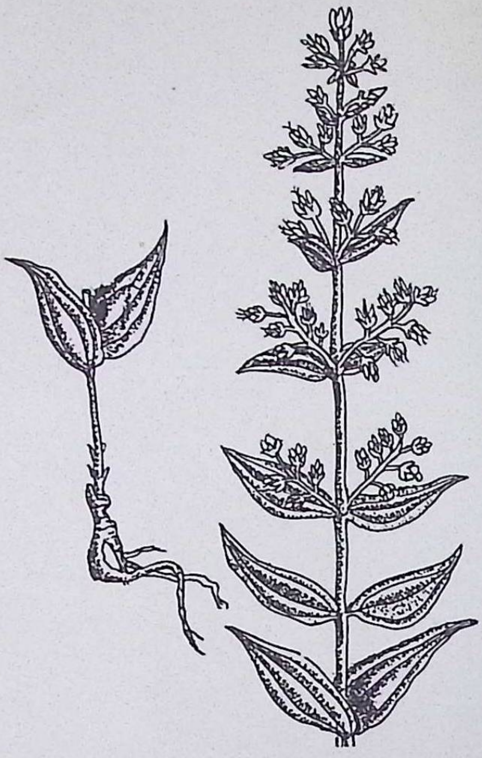
Cornus capitata Wall. (Bhamora) Page No. 54



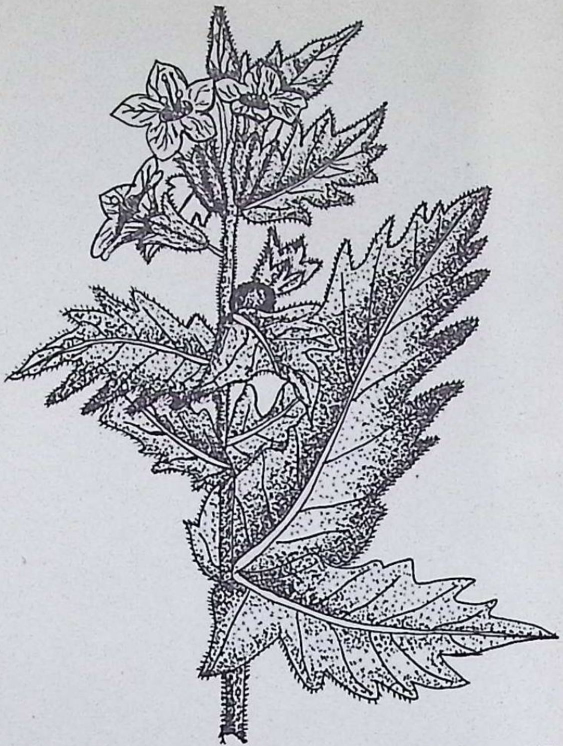
Daphna papyracea Wall (Satpura) Page No. 93



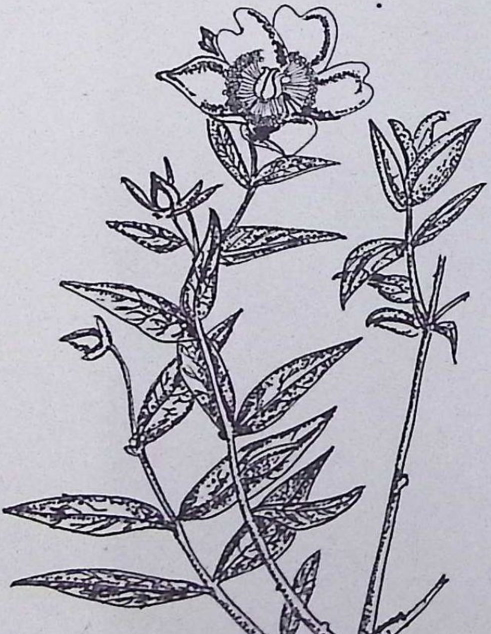
ACONITUM FEROX WALL.



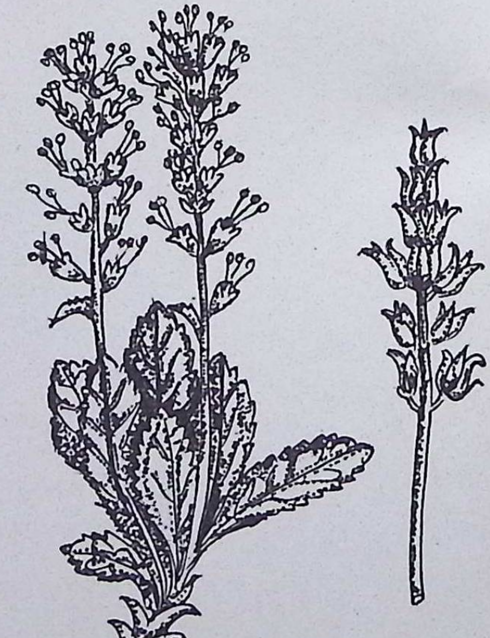
Swertia chirata Ham. (Chirayata, Kirata) Page No. 73



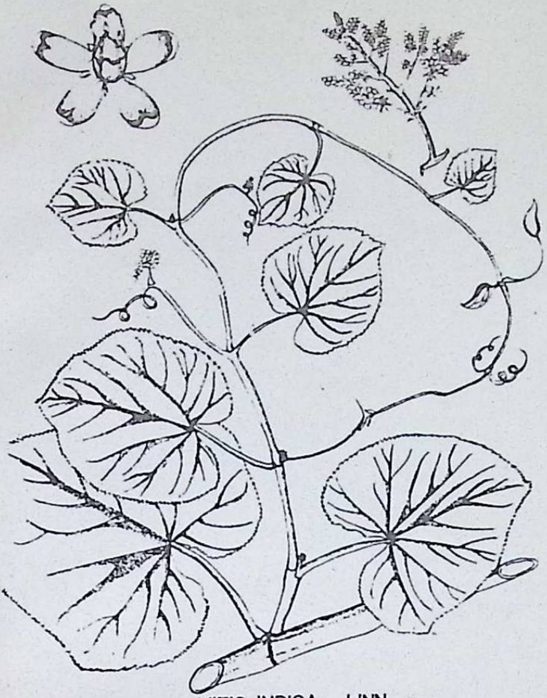
Hyoscyamus niger Linn. (Parsheekyabani) Page No. 77



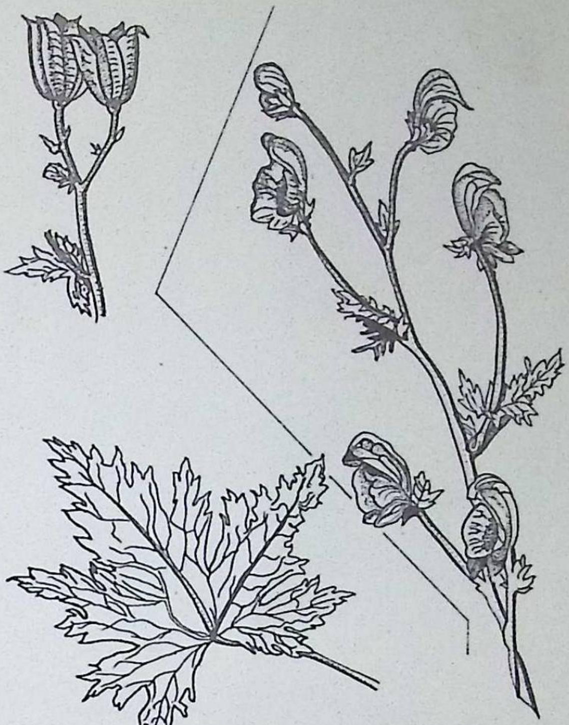
Hypericum patulum Page No. 18



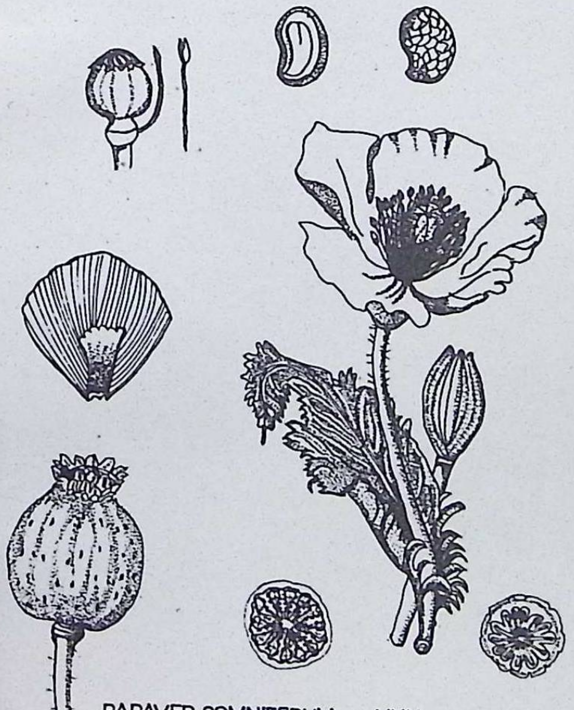
Picrorhiza kurroa Benth (Kutakee) Page No. 79



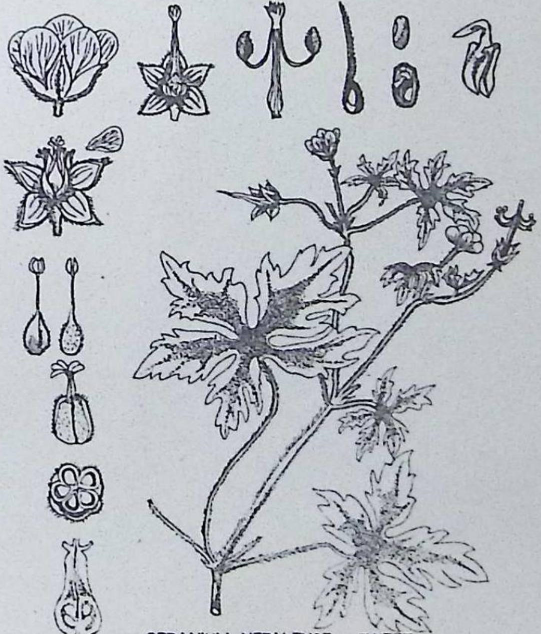
VITIS INDICA LINN.



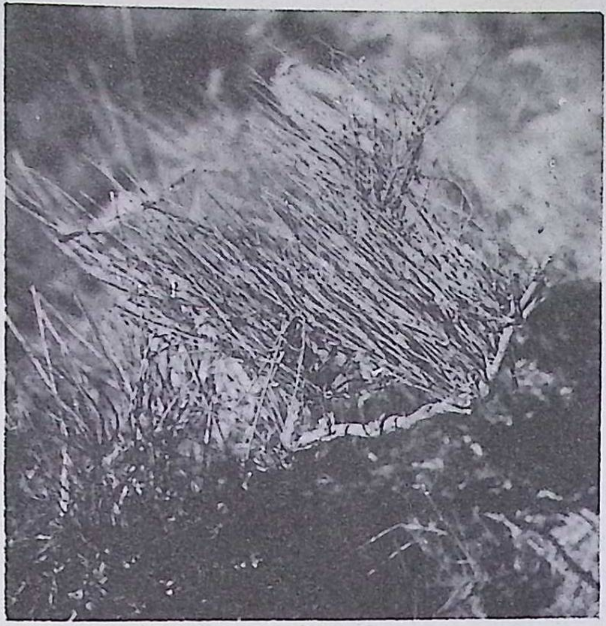
ACONITUM PALMATUM D. DON.



PAPAVER SOMNIFERUM LINN.



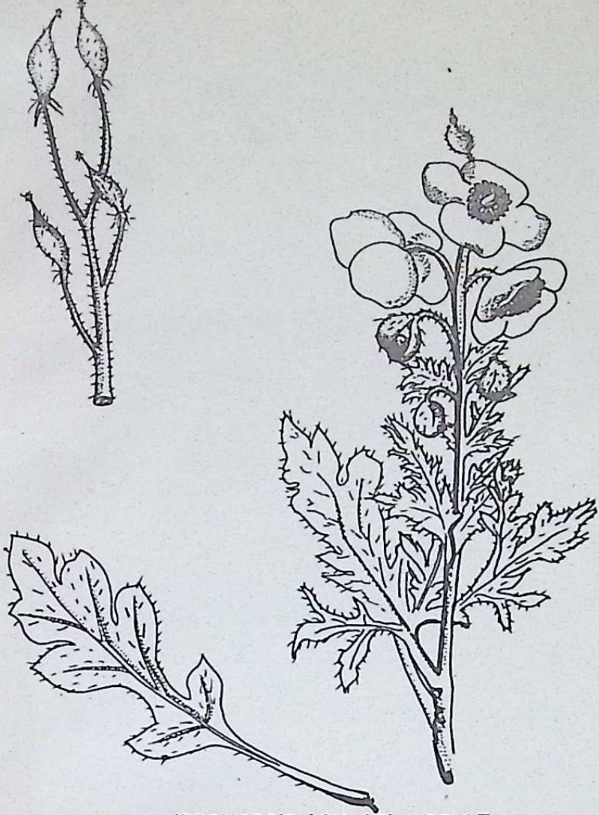
GERANIUM NEPALENSE SWEET.



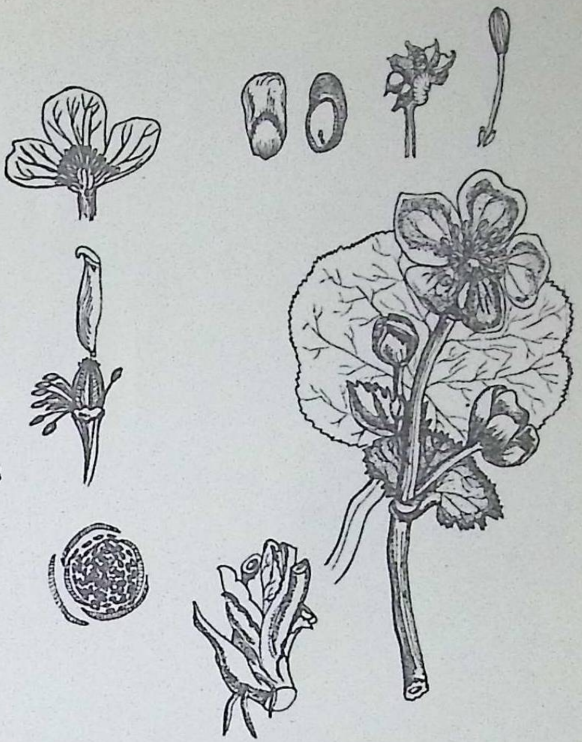
Ephedra geradiana **Wall (Somkalpa) Page No. 111**

A view of Temple of Kedar Nath in Mandakini Valley.

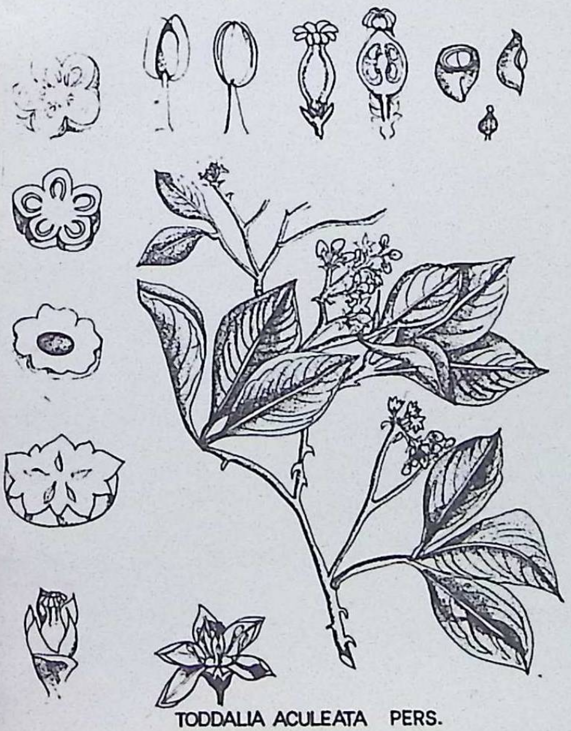
Datura metel **Linn. (Datura) (Satpura) Page No. 76**



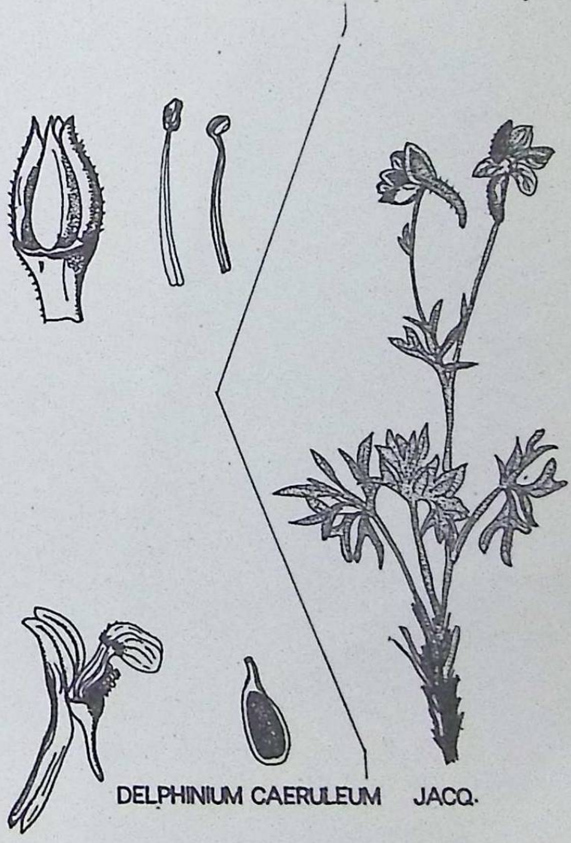
MECONOPSIS ACULATA ROYLE.



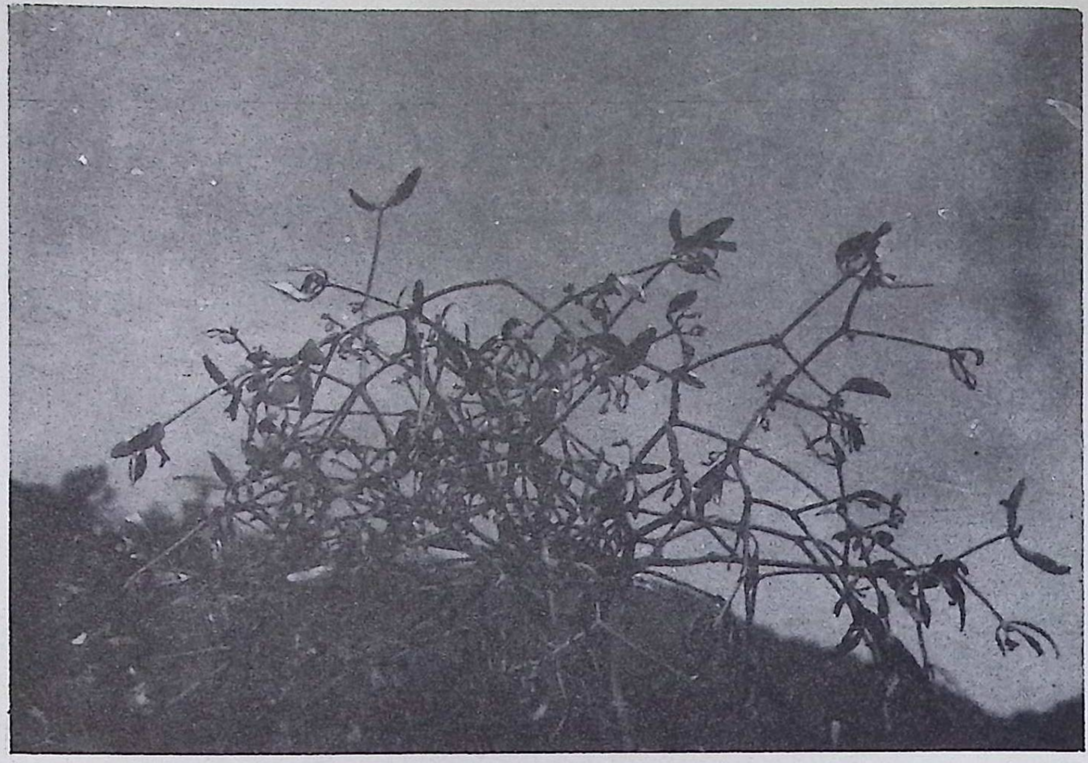
CALTHA PALUSTRIS LINN.



TODDALIA ACULEATA PERS.

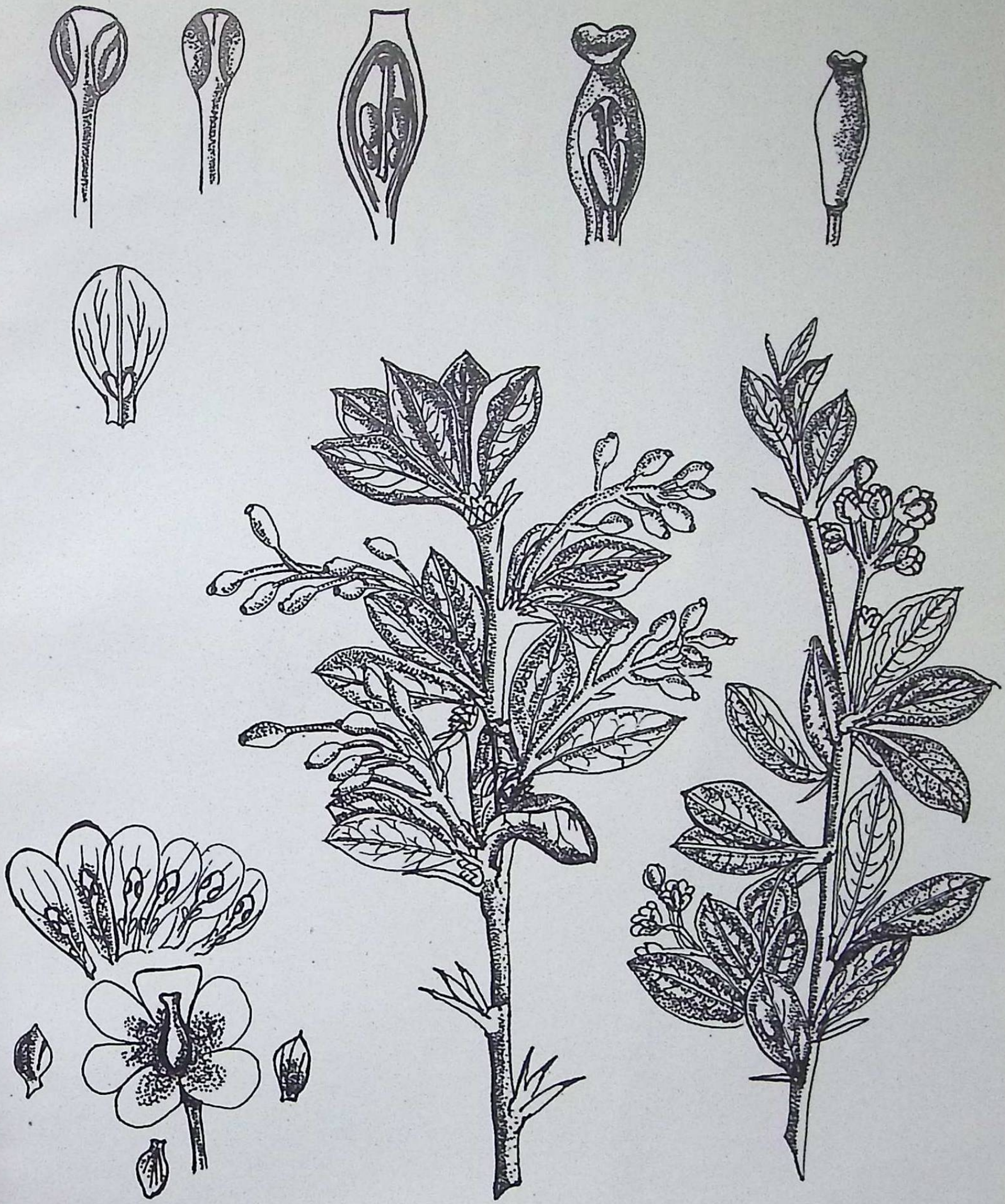


DELPHINIUM CAERULEUM JACQ.

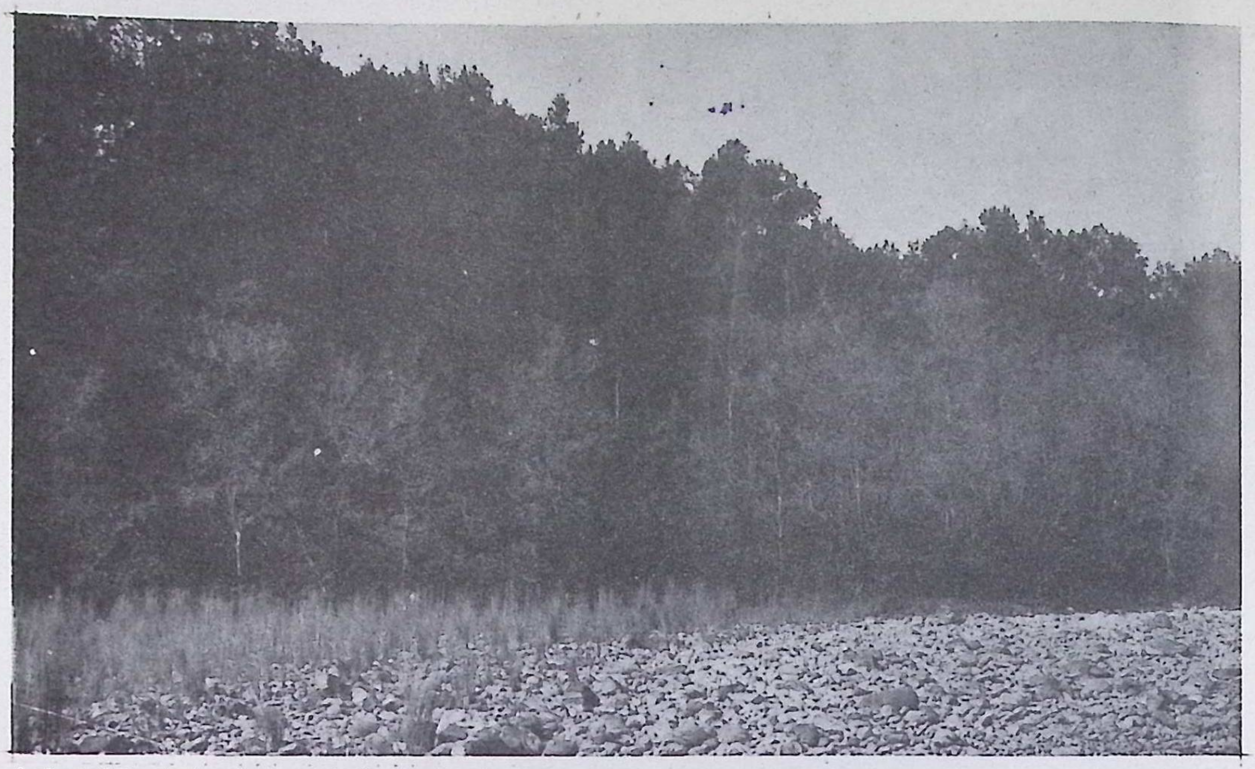


Viscum album Linn. (Chelukabana) (Vandak) Page No. 94

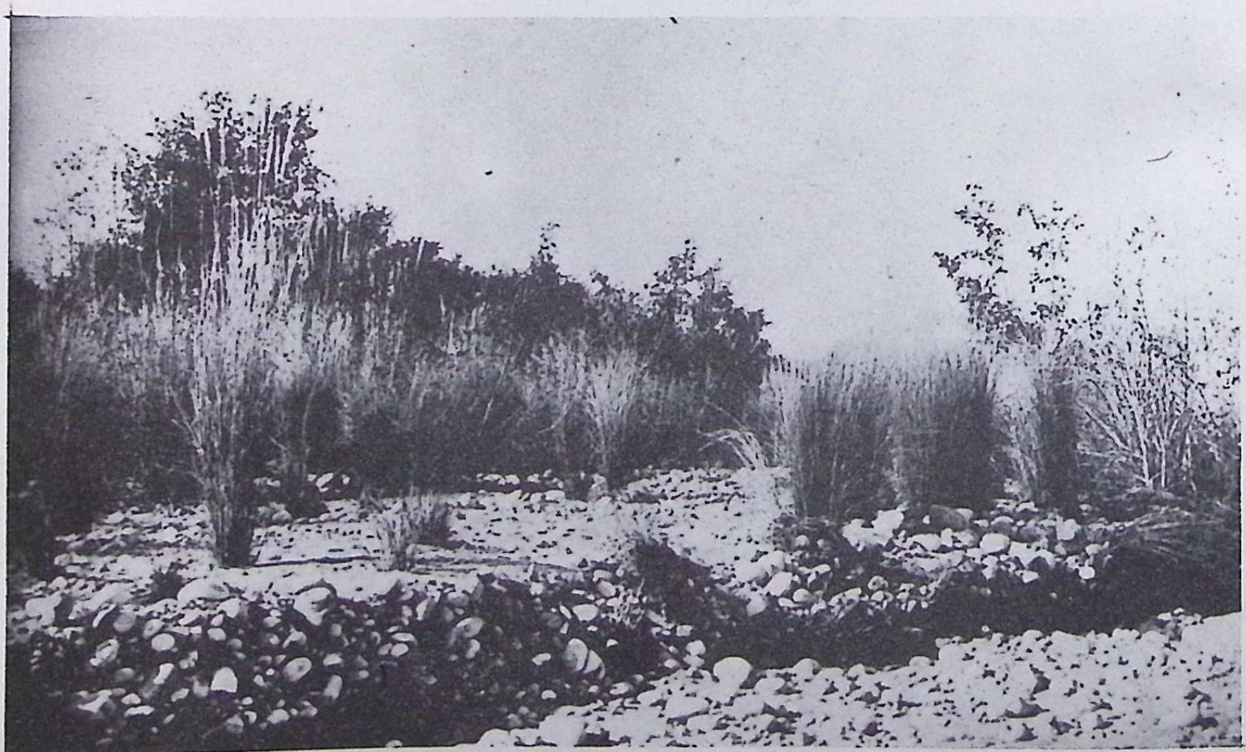
A view of Evergreen forest in Tehari Garhwal.



BERBERIS ARISTATA DC.



A view of Tropical moist forest in Garhwal region.



A view of Ravines Drydecidous forest in Garhwal.

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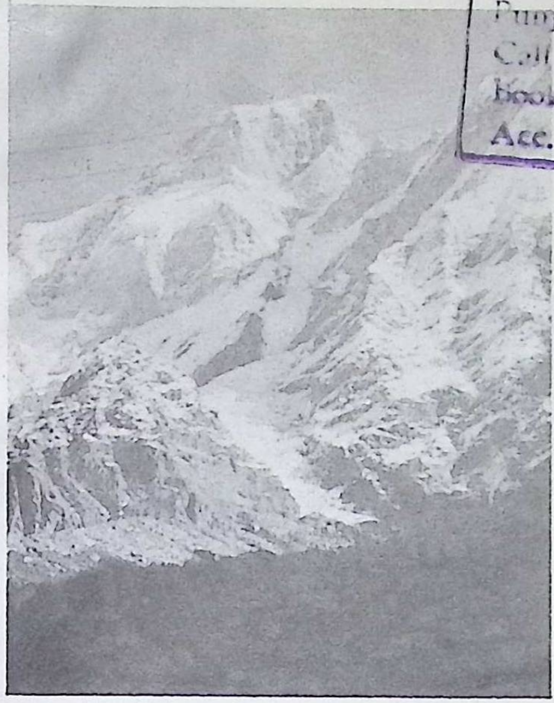
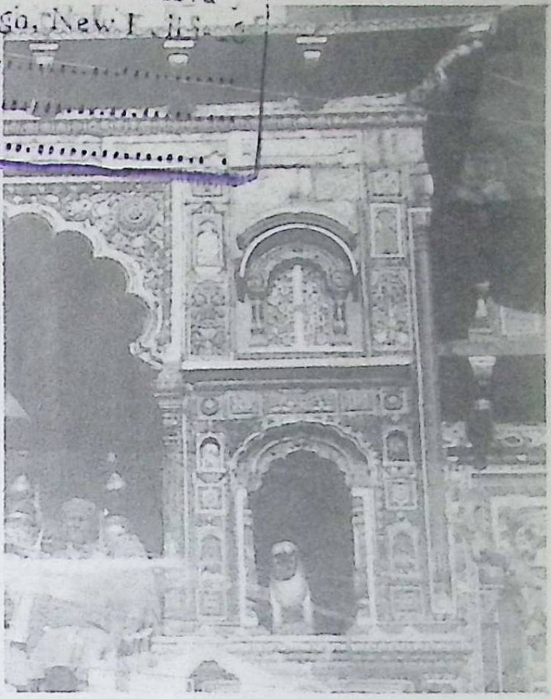
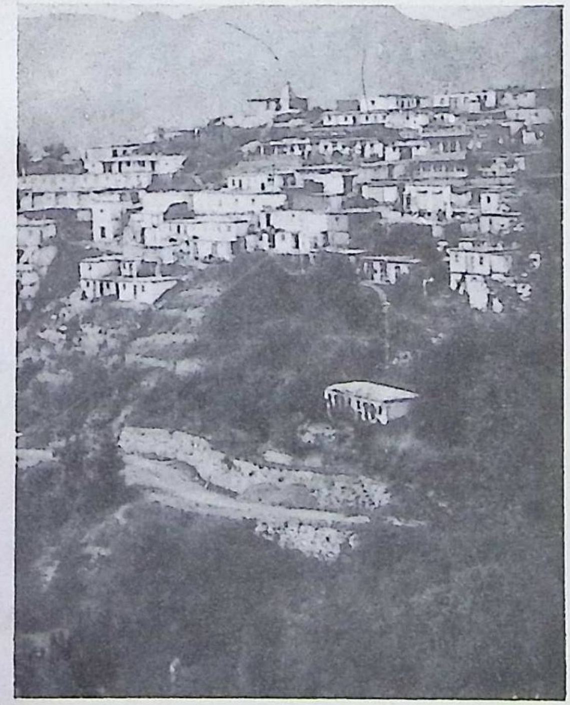


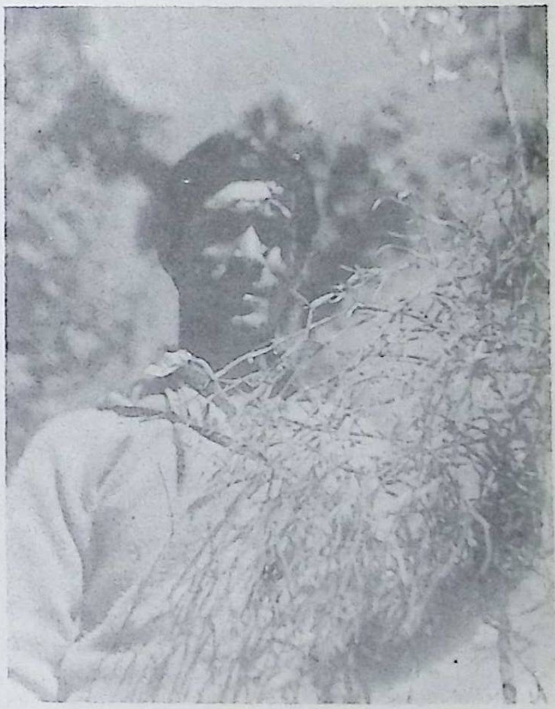
A view of Basuki Tal area in Kedar Nath.



Dr. Unyal in Badari Nath Temple.



Location of Chamba Medicinal Plant Garden in Tehri Garhwal.



Dr. Uniyal collecting the medicinal plants in Bhilangana Valley.

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